JOURNAL OF THE UNIVERSITY LIBRARIANS ASSOCIATION OF SRI LANKA

Volume 28 Issue 2 **July 2025**

ISSN: 1391-4081

e-ISSN: 2579-2253

A publication of the

University Librarians Association (ULA) of Sri Lanka

(Web: www.ulasl.lk)

Journal of the University Librarians Association of Sri Lanka (JULA) is a double-blind peer reviewed refereed journal which is published biannually by the University Librarians Association of Sri Lanka. In addition, there can be special issues published as decided by the Executive Committee of the Association.

Subscription Rate: SLR 500 or USD 50. The price includes the cost per copy and postage fees.

JULA is also available online at https://www.ulasl.lk/, https://jula.sljol.info/and http://www.ebscohost.com/public/library-information-science-source
JULA is indexed in Library & Information Science Abstracts (LISA)

JOURNAL OF THE UNIVERSITY LIBRARIANS ASSOCIATION OF SRI LANKA

Volume 28 Issue 2 **July 2025**

ISSN: 1391-4081

e-ISSN: 2579-2253

JOURNAL OF THE UNIVERSITY LIBRARIANS ASSOCIATION OF SRI LANKA

Author Guidelines

Journal of the University Librarians Association of Sri Lanka (JULA) serves as a platform to publish papers that convey significant research findings and recommendation to the field of Library and Information Sciences and its policies. These articles could be sent by professionals and practitioners in the field of Library and Information Sciences in Sri Lanka. Papers are expected to report state-of-art information and cutting-edge technology in Library and Information Sciences. Book reviews, short papers, and commentaries are also encouraged for publishing. However, priority will be given to research articles that pass rigorous reviewing.

Reviewing

The JULA executes double-blind peer review to abide by the quality protocols. All contributions will be reviewed by two independent experts from local and/or foreign referee panels. Review process will be clandestine and impartial, as per the editorial stance of JULA.

General Information

- **Format:** File formats should preferably be in .doc or .docx, prepared in MS Word. Papers should be word processed with Times New Roman, font size 12-point, 1.5 line spacing and page size A4. Do not format the text in multiple columns. Limit the manuscripts sections/sub-sections to five heading levels, which should be clearly presented. Generally, footnotes are not permitted, thus, footnote information must be moved into the main text or the reference list.
- **Length:** Authors are expected to present their works as concisely as possible, minimum 3000 and not exceeding 7000 words count.
- **Structure:** The paper should contain title, author/s' details, abstract, keywords (maximum 6 words/phrases), body text, and list references/bibliography.
- **Tables and figures:** Tables must be prepared using standard formats and all tables must be uniform in format and font. If the data were extracted from other sources, please denote the source courtesy immediately below the table. Figures should be clear and black and white or gray scaled. Tables and Figures should be set in line with the text. The figures are preferred to be in grey scale that has clear distinction between adjacent areas and labels. Please submit color diagrams/images/plates separately as these will be useful in publishing on the web.
- **Author details:** Author(s) name, affiliation(s), designation, mailing address and email address. Brief biography of author(s) could be sent, if requested by the Editor.
- **Referencing style:** JULA mandates authors to use latest APA style of referencing.

Medium/Language

Primary and preferable language of the journal is English; however, articles written in Sinhala and Tamil are also entertained if the article is associated with an extended abstract in English. The extended abstract of non-English papers should include the title, abstract, introduction,

materials and methods, results, discussions, conclusions and reference etc. as appropriate. Content of the papers should be thoroughly corrected for any linguistic/grammatical errors.

Submission Process

Authors are requested to send an electronic copy of their full paper to the editor's email. Do not submit an article that is already published or submitted for publishing in any other journals or conferences. Authors are hereby strictly advised to avoid plagiarism (either intentional or accidental) in their papers, since JULA will not take any responsibility with respect to the legal consequences.

Authors are advised to submit their works after completing all types of formatting, complying with the guidelines, to avoid delays in handling. They will be requested to revise the paper (if required) after the reviewing process and send the camera-ready copy to the Editor according to the given instructions. Submission and inquiries could be sent to the editor of JULA. Additional instructions can be obtained from the ULA web site: www.ulasl.lk

Credence and Visibility

JULA is also published in SLJOL and the process of article submission, reviewing, and publishing are completed using Open Journal System (OJS). OJS is a journal management and publishing that system has been developed by public knowledge project through its federally funded efforts to expand and improve access to research. Authors Are encouraged to upload their papers on to SLJOL directly by logging in to http://www.sljol.info (Authors have register in SLJOL before submitting his/her paper). Nevertheless, if authors have any difficulty in dealing with online submission, they advised to send their papers by e-mail to the Editor (slulaeditor@gmail.com).

Journal of the University Librarians Association of Sri Lanka, Vol. 28, Issue 2, July 2025, 1-27, DOI: https://doi.org/10.4038/jula.v28i2.8108

Research Mapping of "*Intellectual Property Law*": A Bibliometric Visualization Analysis Based on the Scopus Database from 2000 to 2023

P. Poologanathan [1]

ABSTRACT

This study aims to provide a comprehensive bibliometric mapping of global research trends in *Intellectual Property Law (IPL*) from 2000 to 2023, using data extracted from the Scopus database. Despite IPL's critical role in regulating creativity, innovation, and knowledge dissemination, especially in the digital age, there has been limited bibliometric synthesis of its scholarly landscape. This research addresses that gap by systematically analyzing 801 documents using VOSviewer, Biblioshiny and Microsoft Excel to uncover conceptual structures, collaborative networks, and thematic evolutions within the field. The analysis covered publication output by country and breakdowns by journal, institution, subject, keywords, citations, documents, and author. In total, 801 publications were published with 3,824 citations in the past 23 years. Co-authorship analysis highlights fragmented collaboration, with limited international cooperation outside high-income countries, particularly the USA and the UK. Influential authors and journals include institutions such as *Harvard University* and journals like the *Journal of IPL & Practice*.

[1]Assistant Librarian, University of Jaffna, Sri Lanka.
Email: poologan@univ.jfn.ac.lk, https://orcid.org/0000-0002-7084-5688

Received: 02 January 2025, Accepted revised version: 30 May 2025.

Keyword co-occurrence patterns suggest growing attention to terms such as "innovation," "digital economy", and "intellectual property", pointing to shifts in the legal discourse around emerging technologies. The USA produced the highest number of publications, 196 (24%), while the maximum number of publications was published in 2020 and 2021 with 47 records (6%). It was also found that the most commonly used keyword is *Intellectual Property* 138 (17%) in the publication on *IPL*. This bibliometric mapping contributes to the Library and Information Sciences (LIS) field by offering a knowledge structure of IPL that supports evidence-based collection development, scholarly communication services, and policy formulation related to digital rights and access to knowledge.

Keywords: Intellectual Property, Law, Human Mind, Property Rights, Intangible Assets, Bibliometric.

Introduction

In general, I*ntellectual Property Law (IPL)* refers to a body of law that safeguards the works of human intelligence and creativity. It establishes a legal framework for the ownership and use of these intangible assets by granting people or organizations exclusive rights to their innovations or other creative works. *IPL* covers various creative works, such as names, symbols, designs, literary and creative works, inventions, and pictures used in commerce. By giving authors, inventors, and creators the motivation to devote their time, energy, and resources to create new concepts and forms, *IPL* aims to promote innovation and creativity (Bentley & Sherman, 2014).

IPL is inherently connected to the field of LIS, as it underpins the legal structures for creating, accessing, using, and disseminating information and knowledge. In an era of rapid digitization, librarians and information

professionals are increasingly responsible for interpreting and managing issues related to copyright, licensing, open access, and digital rights management, all of which are foundational to IPL (Crews, 2012; Dryden, 2015). As custodians of knowledge and advocates for equitable access, LIS professionals must also navigate complex legal landscapes to support scholarly communication, institutional repositories, and fair use principles (Smith, 2014). Despite the growing relevance of these issues, there remains a notable gap in bibliometric studies that comprehensively map global research trends in *IPL* from an LIS perspective. This study was therefore undertaken to offer a structured and evidence-based analysis of *IPL* scholarship, helping librarians, researchers, and academic institutions had better understand the evolution, impact, and dissemination of research in this interdisciplinary domain.

There are various categories of intellectual property rights. The following are some of them: *Patent Law* protects inventions and discoveries and grants exclusive rights to the inventor. *Copyrights* protect the original works of authorship, for example, books, music, and artistic creations, giving the creator exclusive rights to reproduce their works. *Trademark law* safeguards symbols, names, and slogans, identifying and distinguishing goods and services in the market. *Trade Secrets* protect the confidentiality and proprietorship of trade information, such as formulas, processes, and business methods. Another one is *Industrial Design,* which covers the visualization design of objects and protects the products. Finally, *Plant Breeder's Rights* aims to protect the new varieties of plants developed by breeding (World Intellectual Property Organization, 2016).

When discussing a brief overview of IPL, it is important to note that Europe is the origin of the rules and regulations governing this legal

framework (Cornish et al., 2013). The practice of granting patents began in the fourteenth century, marking the early development of IP protection. Over the centuries, *IPL* has evolved into a complex system shaped by historical, economic, and technological changes. The following are key milestones in the development of *IPL;*

- Ancient Origins-The concept of protecting intellectual creations has ancient roots. Early forms of legal protection for inventions existed in ancient Greece and Rome (Ginsburg, 2002).

- The Statute of Monopolies (1624) - Enacted in England, this statute is one of the first known examples of a codified legal framework for patents, limiting the Crown's power to grant monopolies and laying the groundwork for modern patent law (Machlup & Penrose, 1950).

- The Statute of Anne (1710) - This law, enacted in England, is the first copyright law. It granted authors exclusive rights to print and publish their works for a limited period, establishing the foundation of copyright protection (Ginsburg, 1990).

- The Industrial Revolution - During the 18th and 19th centuries, rapid industrialization increased recognition of the economic value of inventions and innovations, further shaping and expanding IP laws to encourage and protect creativity and technological advancement (Cornish et al., 2013).

This study applies bibliometric techniques to examine trends in scholarly output, theme concentrations, and collaboration networks across time to improve the understanding of the intellectual structure of IPL and its interdisciplinary dimensions. Bibliometric analysis is a quantitative method for assessing and characterizing scholarly literature by examining

bibliographic data such as publication outputs, citation frequencies, authorship, and keyword trends. It facilitates the identification of trends in research, landmark publications, key contributors, institutional affiliations, and collaborative networks within a research field (Fu, Y., 2023). Through this methodological approach, researchers can map a topic area's intellectual structure, evaluate its scientific productivity, and trace the evolution of its primary themes. Therefore, bibliometric analysis offers a fascinating insight into several aspects of *IPL's* scholarly communication, including overall citation analysis, author and journal impact, co-authorship patterns, keyword co-occurrence, institutional productivity, and thematic evolution. These metrics result in a composite image of the evolution of the discipline, academic influence, and areas of emerging concern or underrepresentation. The overall objective of this study is to conduct a comprehensive bibliometric mapping of *IPL* research published in the multidisciplinary Scopus citation database from 2000 to 2023. Scopus provides access to many peer-reviewed journal articles, conference papers, and other scholarly documents through its wide coverage and stringent indexing requirements. It is a suitable platform for analyzing long-term patterns and trends in IPL research.

Objectives

This study focuses on 801 publications related to *IPL*, which were published in the Scopus database from 2000 to 2023. The following are the objectives of the study.

- To examine the research trend on the *IPL* publication till 2023.
- To identify the leading countries contributing to *IPL* research.
- To find the most prolific authors and determine the authorship patterns of published papers.

- To identify the top ten (10) leading institutions, the source of publications, the most used keywords of publications, the leading funding agencies, and the dominant language with the highest number of publications on *IPL* research.

Literature Review

Numerous bibliometric studies have been conducted across various disciplines using data from prominent citation databases such as Web of Science and Scopus. These analyses have explored publication patterns, thematic trends, and scholarly impact in medicine, engineering, social sciences, and legal studies. However, despite the growing importance of *IPL* in the context of innovation, globalization, and digital transformation, there remains a notable absence of comprehensive bibliometric evaluations explicitly focused on this domain. To date, no systematic bibliometric study has mapped the global research landscape of IPL using Scopus data. This lack of focused analysis highlights a clear gap in the literature. It underscores the need for a study that critically examines the intellectual structure, thematic evolution, and collaborative patterns within IPL scholarship. Addressing this gap, the present research offers a novel contribution by applying bibliometric methods to analyze the development and diffusion of knowledge in *IPL*. The literature review section is divided as follows,

1. Review key developments in *IPL* research

Sun et al. (2024) conducted a comprehensive bibliometric analysis to uncover key trends and patterns in the field of data-based intellectual property by using CiteSpace software. Their study examined collaboration networks, co-citation patterns, and keyword co-occurrence to map the intellectual structure and evolution of the field. The findings indicate a marked growth in

scholarly output related to data intellectual property management, particularly since 2013. The study highlights that while global collaboration, particularly among the United States, China, and the United Kingdom, is robust, institutional collaboration remains relatively limited. Furthermore, emerging research directions increasingly focus on the convergence of data privacy, innovation, and legal governance. This work offers a holistic bibliometric framework for understanding the development of data-based intellectual property, identifies current research challenges, and proposes future avenues of inquiry.

Singh & Hasan (2013) evaluate the output of world literature on intellectual property that is researched for publications and indexed in the Science Citation Index (SCI) database from 2001 to 2010. The authors published a total of 1439 papers in the field of intellectual property during this period. The average number of publications published per year was 143.9 papers. The highest number of papers, 172, was published in 2010. The countries involved in producing publications were 74 in number. The United States was at the top of producing 572 (39.75%) publications, followed by Great Britain with 119 (8.23%), and India stood at the eighth position with 54 (3.75%) publications.

Biglu (2008) conducted a comprehensive scientometric study that explored the landscape of patent-related literature through a five-part analysis. The first section focused on patent applications and granted patents registered by international agencies. In the second, the author examined patent-related documents indexed in MEDLINE from 1965 to 2005, using scientometric techniques to evaluate publication trends. The third section analyzed documents indexed under the topic "patents" in the Science Citation Index (SCI) over the same period (1965–2005). In the fourth section, citations to

patent documents within the SCI database were evaluated, followed by the fifth section, which analyzed the average number of references per paper in SCI-indexed publications. The findings highlighted that the United States consistently led in filing and granting patents, followed by Japan and Germany. The study also observed a growing pattern of international collaboration in patent-related scientific publishing. This research is a foundational analysis of patent literature trends and metrics, illustrating how publication behaviours and citation dynamics evolve within the broader intellectual property landscape and scientific communication.

2. Review of existing Bibliometric study

Hu et al. (2024) scrutinize the trends and dynamics of Intellectual Property Protection (IPP) of Intangible Cultural Heritage (ICH) in China, utilizing a dataset of 91 papers from the CNKI database spanning 2011 to 2020. The study uses CiteSpace software to visualize and analyze the literature across multiple dimensions, including article count, authorship, institutional affiliations, and keyword co-occurrence. Findings indicate a lack of robust collaboration among authors and institutions in IPP and ICH. Critical research hotspots identified encompass intangible cultural heritage, intellectual property protection, inheritors, legal protection, copyright, IPL, and geographical indications, with the legal safeguarding of ICH's intellectual property, digital conservation, traditional cultural expressions, and original authentication emerging as the leading research frontiers. This investigation provides a holistic view of China's IPP and ICH landscape, offering essential scientific insights for ongoing scholarly discourse. This study mainly benefits policymakers and stakeholders in the cultural heritage sector, underscoring the necessity of enhanced authorial and institutional collaboration and the

prioritization of legal and digital protection mechanisms to safeguard China's intangible cultural legacy for posterity.

Salam and Senin (2022) studied using the Scopus database for a deeper understanding and advanced knowledge of "Innovative behaviour", both theoretical and recent research developments. The study was conducted between 1961 and 2019 to see how authors, journals, countries, academic disciplines, research institutes, and keywords relevant to "innovative behaviour" were used as search words. After thorough consideration, 931 research papers were reviewed. In analyzing the authors' keywords, "innovation" was the most frequently occurring among other keywords. The data has shown a stronger link between "innovative behaviour" and "innovation" with 34 occurrences.

Modi, Vasmatkar, and Nandekar (2023), this article analyses how human rights and IPR, specifically copyrights, are integral to each other when read together. The primary issue is the collision between copyright and the human right of free speech. The article discusses in detail how copyrights form a human right and need to be recognized as the same. The nuance of free speech and copyrights in the Internet domain and the need to account for the publisher's independence and IPR has been discussed. The article attempts to understand the reasons for copyright violations while exercising the human right of free speech and the possible legal solutions to this problem. The article aims to dig out all the research in this respect and clarify the concept for future researchers. This bibliometric analysis is implemented using the Scopus and Web of Science repositories.

Research Design and Methods

The Scopus database was chosen for data collection in this study because it is one of the largest and most comprehensive multidisciplinary databases. Scopus is a comprehensive academic database covering over 22,000 journals from 5,000 publishers, 150,000+ books, and around 6.4 million conference papers. It contains 69 million records and 1.6 billion cited references, with coverage dating back to 1970. It is a reliable source for bibliometric and scientometric research (https://belmont.libguides.com/Scopus?utm).

For this research, the search query "*IPL*" was used in the title field, with the time frame limited to 2000 to 2023. A total of 801 records were retrieved in Plain text and CSV file formats. The collected data were analyzed using VOSviewer, Biblioshiny, and Microsoft Excel tools in alignment with the study's objectives.

Interpretation and Analysis

Top ten (10) Countries in the publications on *IPL*

Table 01 presents a country-wise analysis of research publications on *"IPL"*. As indexed in the Scopus database, researchers from over 160 countries produced 801 IPL publications from 2000 to 2023. According to the data, the *United States* is the most prolific contributor, with 196 publications (24%), accumulating 1,519 citations and an h-index of 20. This is followed by the *United Kingdom*, which has produced 103 publications (13%), receiving 486 citations and an h-index of 10. *Germany* ranks third with 66 publications (8%), 385 citations, and an h-index of 8, followed by *Australia* with 43 publications (5%), 205 citations, and an H-index of 8.

Table 01

Publication from the Top Ten Leading Countries

Country	Records	Percentage	T.Citation	h.Index
United States	196	24%	1519	20
United Kingdom	103	13%	486	10
Germany	66	8%	385	8
Australia	43	5%	205	8
Italy	35	4%	142	6
China	27	3%	49	4
India	21	3%	45	3
Canada	19	2%	228	6
Japan	18	2%	17	3
Switzerland	18	2%	39	4

T. Citation-Total Citations

Other notable contributors include *Italy* (35 publications, 4%), *China* (27 publications, 3%), *India* (21 publications, 3%), *Canada* (19 publications, 2%), *Japan* (18 publications, 2%), and *Switzerland* (18 publications, 2%).

Top ten (10) Prolific Authors in publication

Table 02 presents a statistical overview of the top ten most prolific authors in the analyzed dataset, based on publication count, total citations, h-index, and citations per publication (CPP). While Drexl, J. leads in publication with 13 papers (2% of the dataset), his total citation count (68) and h-index (6) suggest moderate influence, yielding a CPP of 5.23. In contrast, Geiger, C., with seven publications, demonstrates the highest scholarly impact, accumulating 198 citations (CPP = 28.29) and an h-index of 6, indicating significant recognition despite a lower output. Authors Kur, A., and Hilty, R.M. each contributed eight papers, earning CPPs of 8.75 and 6.63, respectively, reflecting balanced profiles of productivity and influence. Allcock, J.P.M., with eight publications and zero citations, emerges as an outlier, potentially due to recent publication or limited academic traction.

Table 02

Top ten (10) Prolific Authors in publication

Author	Records	P. Percentage	T. Citation	h. Index
Drexl, J.	13	2%	68	06
Allcock, J.P.M.	08	1%	00	00
Hilty, R.M.	08	1%	53	05
Kur, A.	08	1%	70	06
Geiger, C.	07	1%	198	06
Akakura, T.	05	1%	09	02
Kato, K.	05	1%	09	02
Montagnani, M.L.	05	1%	06	01
Balganesh, S.	04	0%	36	01
Buccafusco, C.	04	0%	61	04

T. Citation-Total Citation, P. Percentage - Publication Percentage

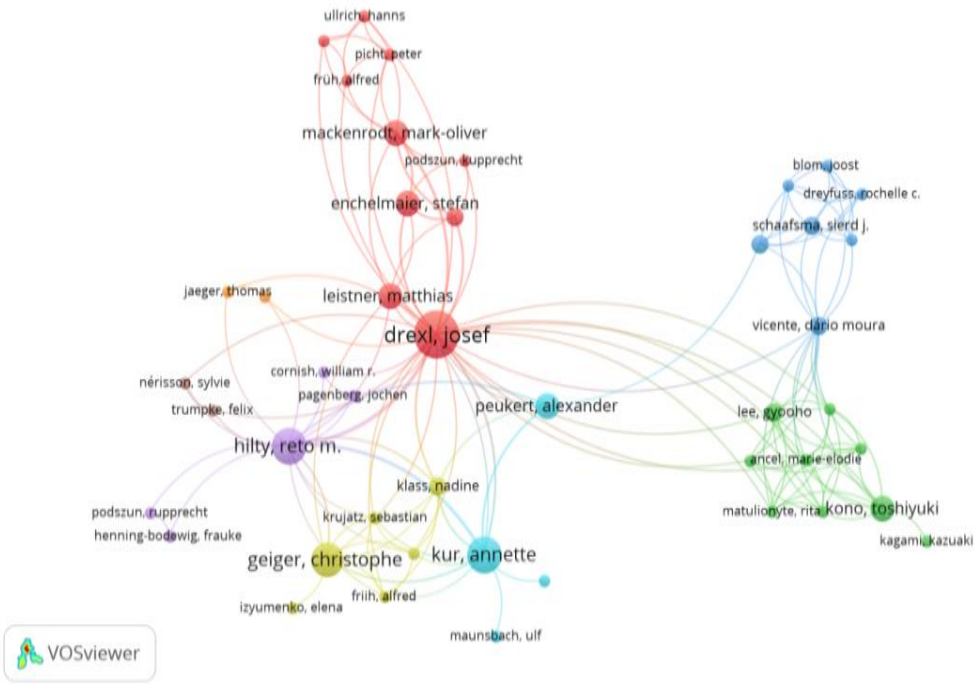
Authors with fewer records, such as Buccafusco, C. (CPP = 15.25, H-index = 4) and Balganesh, S. (CPP = 9.00, H-index = 1), show that high per-paper impact is achievable even with limited output. Overall, the average CPP across the top ten authors is 7.61, and the mean h-index is 3.3. These findings highlight that while publication count indicates productivity, citation-based metrics, particularly CPP, offer a more nuanced assessment of scholarly impact. Furthermore, the relatively low citation and h-index values suggest that the dataset represents a specific academic niche or emerging area, rather than the global standing of these authors. Therefore, comparisons with widely cited scholars like Peter Menell (2007) must be contextualized carefully within the limits of the current dataset.

Figure 01 illustrates the co-author collaboration analysis of publications on *IPL* based on data from the Scopus database. In this

visualization, larger nodes represent the most prolific authors, indicating more publications and collaborations.

Figure 01

Author collaboration analysis of publication on IPL



At the centre of the network, *Josef Drexl* is represented by the largest node, indicating his leading role in publication count and collaborative activity. The red cluster, prominently featuring *Drexel*, includes frequent collaborators such as *Leistner, Matthias, Enchelmaier, Stefan, and Mackenrodt. Mark-Oliver* suggested a strong and cohesive research group. The map reveals a well-connected scholarly landscape, with specific authors emerging as central figures in fostering academic collaboration and knowledge dissemination.

Publications by Institution

Table 03 presents the leading institutions contributing to research on *IPL*, based on data extracted from the Scopus database between 2000 and 2023.

Table 03

Publications by Institution

Institution	Records	Percentage	Citation	h-Index
Max Planck Institute for Innovation & Competition.	25	3%	112	06
Queen Mary University of London.	11	1%	25	04
Max Planck Institute	09	1%	171	05
University of Cambridge	09	1%	63	05
Ludwig-Maximilians-Universität München	08	1%	127	05
University of Nottingham	07	1%	12	02
National University of Singapore	07	1%	08	02
Monash University	07	1%	39	02
Università Bocconi	07	1%	13	02
University of California	07	1%	54	04

The Max Planck Institute for Innovation & Competition stands out as the most productive institution among the studied, contributing 25 publications (3%) with 112 citations and an h-index of 6, reflecting both the volume and sustained impact of its scholarly output. The Max Planck Institute (other departments) also has a strong influence with nine publications. Notably, it achieves a higher citation count (171) and an h-index of 5, indicating its research's high relevance and scholarly impact.

The Queen Mary University of London ranks second in output with 11 publications (1%) and 25 citations, maintaining an h-index of 4. Other prominent contributors include the *University of Cambridge and Ludwig-Maximilians-Universität München*, producing high-quality research. Cambridge recorded nine publications, 63 citations, and an h-index of 5, while *Ludwig-Maximilians-Universität* achieved eight publications, a strong 127 citations, and an h-index of 5. These institutions demonstrate a balanced combination of research productivity and influence.

Several other Universities, such as the *University of Nottingham, the National University of Singapore, Monash University, Università Bocconi, and the University of California*, each contributed seven publications (1%). However, the impact of citations on these institutions varies significantly. For example, the *University of California* accumulated 54 citations (h-index 4). In contrast, the *National University of Singapore* had only eight citations (h-index 2), suggesting varying levels of visibility and influence across institutions.

Year-wise Publications

Table 04 presents the year-wise distribution of publications on *IPL* from 2019 to 2023. The highest number of publications was recorded in 2020 and 2021, with 47 publications (6%) each, followed closely by 2022 (43 publications) and **2023** (42 publications), both contributing **5%** of the total output. The lowest output was observed in 2019, with 32 publications (4%). In terms of citations, 2022 had the highest impact, with 321 total citations, indicating strong academic engagement. Publications in 2023 also received a significant 275 citations, showing continued relevance. While the number of publications has remained relatively stable, the consistent citation counts highlight the growing importance and influence of research in this field. Overall, the data

reflect a steady upward trend in scholarly interest and impact related to IPL during these five years.

Table 04

Year-wise Publications

Years	Records	Percentage	Total Citation
2023	42	5%	275
2022	43	5%	321
2021	47	6%	280
2020	47	6%	265
2019	32	4%	258

List of top ten (10) most cited papers

Table 05 presents the top ten most cited research papers in *IPL*, highlighting the most influential scholarly contributions based on citation count. The leading paper, "*Risk Aversion and Rights Accretion in IPL"* by Gibson, J., has received 126 citations, indicating its significant academic impact. Following this is Posner, R.A., with 112 citations for his work, *"Intellectual Property: The Law and Economics Approach,"* which integrates legal and economic perspectives and is widely referenced in both disciplines.

Geiger, C.'s paper on the *Constitutional dimensions of IPL in the European Union* has earned 89 citations, reflecting the growing interest in the intersection between fundamental rights and IP regulations. *Demers, J.'s* work on the effect of IPL on *musical creativity and Merges,* R.P.'s historical analysis of a century of IPL received high citation counts, 85 and 80, respectively.

Table 05

List of top ten (10) most cited papers

Papers	Author/s	Citation
Risk aversion and rights accretion in intellectual property law.	Gibson, J.	126
Intellectual Property: The law and economics approach	Posner, R.A.	112
"Constitutionalizing" intellectual property law? The Influence of Fundamental rights on intellectual property in the European Union.	Geiger, C.	89
Steal This Music: How intellectual property law affects musical creativity.	Demers, J.	85
One hundred years of solicitude: Intellectual property law, 1900 -2000.	Merges, R.P.	80
Intellectual property law and practice in the blockchain realm	Gürkaynak, G.,	77
Intellectual property law and the sumptuary code	Beebe, B.	77
Plagiarism, norms, and the limits of theft law: Some observations...	Green, S.P.	74
Moments in law: Contestation and settlement in the history of intellectual property	Sell, S.,	74
Intellectual property law, technology flow and licensing opp...	Bosworth, D., Yang, D	73

The remaining top-cited papers include those by *Gürkaynak, G., Beebe, B., Green, S.P., Sell, S.,* and *Bosworth & Yang,* each with 73 to 77 citations. They cover blockchain, cultural influence, plagiarism norms, historical disputes, and licensing topics. These works underscore the breadth and depth of scholarly discourse in the evolving field of IPL.

Document type distribution of publications

Table 06 illustrates the distribution of publications on *IPL* by document type based on records from the Scopus database. Among the various types, *journal article*s dominate the scholarly output with 306 publications, accounting for 38% of the total.

Table 06

Document type-wise distribution of publications

Document type	Records	Percentage	Total Citation	h-index
Article	306	38%	1730	20
Book chapter	197	25%	409	10
Review	88	11%	871	14
Book	75	9%	640	15
Conference paper	49	6%	80	04
Erratum	39	5%	00	00
Editorial	24	3%	22	02
Note	14	2%	59	03
Short survey	08	1%	13	01
Letter	01	0%	00	00

These articles have accumulated the highest number of citations (1,730) and have an h-index of 20, highlighting their strong academic influence and visibility. *Book chapters* follow with 197 records (25%), though they have received comparatively lower 409 citations and an h-index of 10.

Review papers, while fewer in number (88 records; 11%), have a high impact with 871 total citations and an h-index of 14, indicating their critical role in summarising and synthesizing key developments in the field. *Books* comprise 9% of the publications (75 records) and have received 640 citations, demonstrating significant value, particularly for foundational or comprehensive content, with an h-index of 15. *Conference papers, editorials, notes, and short surveys* contribute smaller proportions, with lower citation

and impact metrics. Interestingly, errata (39 records) and letters (1 record) show no citation impact, reflecting their limited scholarly contribution. The data emphasizes that articles, reviews, and books are the most influential formats in *IPL research*.

Top ten (10) Publication Sources

Table 07 explains that the leading journal publishing research literature on *IPL is the Journal of IIC International Review of Intellectual Property & Competition Law*, which has the highest number of 58 (7%) publications with 313 total citations and 07 h-index. *The Journal of Intellectual Property Law & Practice*, with 36 (4%) records published and 13 citations and 01 h-index, is followed by *the Journal of Intellectual Property Rights* and *Queen Mary Journal of Intellectual Property*, which published 11 (1%) each, respectively.

The rest of the journals, such as *Engineering Management Journal, Grur International, International Journal of Intellectual Property Management, Journal of Intellectual Property Information Technology and E-Commerce Law, Journal of Intellectual Property Law and Management, and Commonwealth Law Bulletin*, contributed one percent (1%) to research publication on IPL.

Table 07

Journal-wise distribution of publications

Journals	Records	Percentage	T. Citation	h-Index
IIC International Review of Intellectual Property & Competition Law	58	7%	313	07
Journal of Intellectual Property Law & Practice	36	4%	13	01

Journal of Intellectual Property Rights	11	1%	32	03
Queen Mary Journal of Intellectual Property	11	1%	14	02
Engineering Management Journal	08	1%	00	00
Grur International	08	1%	10	01
International Journal of Intellectual Property Management	07	1%	05	02
Journal of Intellectual Property Information Technology & E Commerce Law	06	1%	27	02
Journal of Intellectual Property Law & Management	06	1%	03	01
Commonwealth Law Bulletin	05	1%	01	01

T. Citation-Total Citation

Distribution of keywords

Table 08 presents the distribution of frequently used keywords in publications related to *IPL*. The most prominent keyword is *"Intellectual Property*," appearing in 138 records (17%), reflecting its broad and foundational relevance to the research field. This is followed by "Intellectual Property Rights" with 59 records (7%), and "Patent" with 46 records (6%), indicating focused scholarly interest in specific legal protections.

Keywords such as "Copyright" (38 records, 5%) and "IPL" (25 records, 3%) further highlight the thematic core of the literature. Terms like "Patents", "Article", "Human", "Laws and Legislation", and "Law" appear

with lower frequency (2–3%) but still signal important dimensions and interdisciplinary connections of IP research.

Table 08

Distribution of keywords

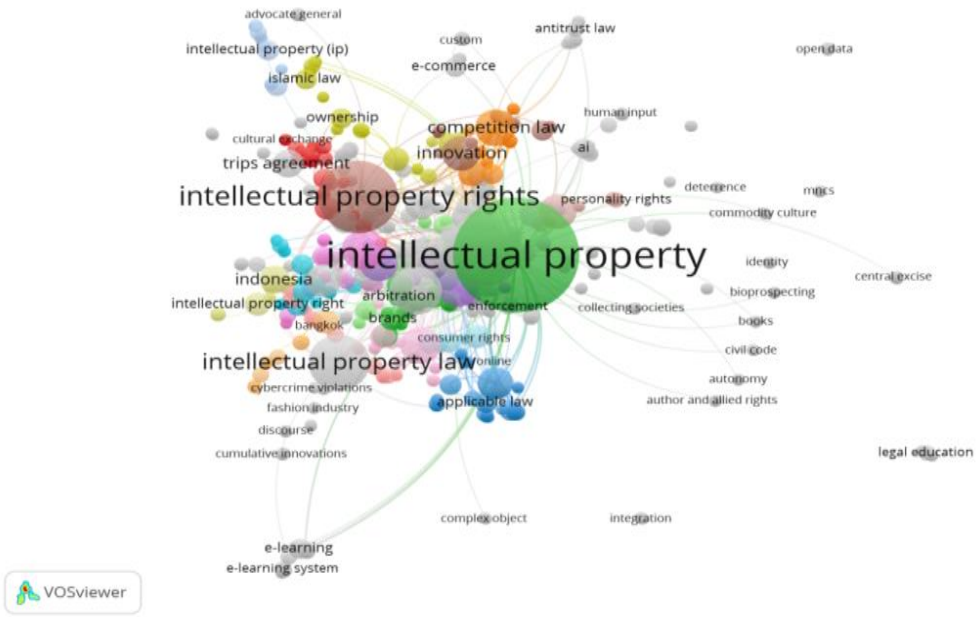
Keywords	Records	Percentage
Intellectual Property	138	17%
Intellectual Property Rights	59	7%
Patent	46	6%
Copyright	38	5%
Intellectual Property Law	25	3%
Patents	22	3%
Article	21	3%
Human	20	2%
Laws and Legislation	19	2%
Law	17	2%

The keyword analysis reveals that while the field is centred on core IP concepts, it also touches on legal, human, and academic publication aspects, offering a multidimensional view of the topic.

Figure 02 explains the author's keyword analysis of publications. The figure is examined according to its size. Keywords *such as intellectual property, intellectual property rights, patent, copyright, intellectual property law, patents, articles, human rights, laws, and legislation and law* come to the fore. This result shows that these concepts are more associated with publications on *IPL*, as expressed in the keyword analysis.

Figure 02

Keyword analysis of publications



Distribution of publication by subject (Discipline)

Table 09 shows the most preferred subject area of research. Social Science is in the highest place, with 635 (79%) publications and 3170 total citations, and the h-index is 26. Followed by Business, Management & Accounting with 86 (11%), 413 total citations and 08 h-index , number of 80 (10%) publications with 616 total citations and 12 h-index belonged to the area of Economics, Econometrics & Finance, Computer Science is 58 (7%) with 169 citations and 05 h-index and area of Engineering is 50 (6%) publications with 40 total citations and h-index 4.

Table 09

Distribution of publication by subject (Discipline)

Subjects	Records	Percentage	T. Citation	h-Index
Social Sciences	635	79%	3170	26
Business, Management & Accounting	86	11%	413	08
Economics, Econometrics & Finance	80	10%	616	12
Computer Science	58	7%	169	05
Engineering	50	6%	40	04
Arts and Humanities	35	4%	143	06
Medicine	30	4%	113	05
Biochemistry, Genetics & Molecular Biology	17	2%	62	04
Decision Sciences	16	2%	06	01
Environmental Science	13	2%	60	05

T. Citation-Total Citations

Arts and Humanities, Medicine, and Environmental Science also contributed to the scholarly output, though with fewer records and lower citation metrics. Despite having 16 publications, Decision Sciences showed minimal impact, with only six citations and an h-index of 1. Overall, the data indicate an intense concentration of research activity in the Social Sciences, while contributions from other disciplines remain modest.

Publications by language

Table 10 presents the language-wise distribution of publications on IPL. Most records are published in English, accounting for 767 publications (96%). These English-language documents also received the highest total citations (3,812) and have the highest h-index (28), indicating their dominant role and wide-reaching academic impact in this research area.

Other languages contribute marginally to the total output. Spanish ranks second with 15 publications (2%) but a very low citation count (8) and

an h-index of 2. Languages like Portuguese, Russian, French, and Japanese have 2 to 4 records, minimal citations (0–12), and h-index values of 1. The categories "Undefined" and "Others" also contribute minimally and show no significant academic impact. In summary, English is the primary medium for scholarly communication in IPL, underscoring its importance for global dissemination and visibility of research in this domain.

Table 10

Publications by Language

Language	Records	Percentage	T. Citation	h-Index
English	767	96%	3812	28
Spanish	15	2%	08	02
Portuguese	04	0.04%	12	01
Undefined	04	0.04%	00	00
Russian	03	0.03%	01	01
French	02	0.02%	01	01
Japanese	02	0.02%	01	01
Others	04	0.04%	01	01

T. Citation-Total Citation.

The findings highlight the evolving momentum and structural disparities in *IPL* research. The recent surge in publications reflects the growing importance of IPL in addressing emerging technological challenges. At the same time, the fragmented collaboration networks and dominance of English-language outputs reveal ongoing global inequities. Addressing these challenges through inclusive research partnerships, multilingual dissemination strategies, and regional academic investment is essential for fostering a more equitable and globally responsive *IPL* research ecosystem.

Conclusion

This bibliometric study examined global research trends in *IPL* using data from the Scopus database covering 2000 to 2023. A total of 801 publications were identified and analyzed using VOSviewer, Biblioshiny, and Microsoft Excel tools. The findings were presented in tables and visual charts to enhance understanding and interpretation of the results. The analysis revealed that the United States is the leading contributor in this research area, producing 196 publications (26%), followed by the United Kingdom and Germany. The most active years of publication output were 2020 and 2021, with 47 publications (6%) each. A dominant 96% (776 publications) were published in English, reaffirming English as the global language of academic communication in legal studies.

Regarding sources, the journal IIC – International Review of Intellectual Property and Competition Law was the most productive, contributing 58 publications (7%). Drexl, J. emerged as the most prolific among the authors, with 13 publications (2%) and a substantial citation impact. Keyword analysis indicated that "Intellectual Property" was the most frequently used term, appearing in 138 records (17%), followed by keywords such as "Intellectual Property Rights," "Patent," and "Copyright." This study provides a clear picture of the publication landscape in the field of *IPL*. The results can benefit academics, legal researchers, librarians, and policymakers, helping them identify key contributors, trending topics, and influential sources. Since *IPL* is an integral part of LIS, this research also offers practical insights for librarians. Furthermore, the study can serve as a valuable reference and methodological model for future bibliometric and scientometric analyses in related subject areas.

References

Bentley, L., & Sherman, B. (2014). *Intellectual property law* (4th ed.). Oxford University Press.

Cornish, W. R., Llewelyn, D., & Aplin, T. (2013). *Intellectual property: patents, copyright, trademarks and allied rights* (8th ed.). Sweet & Maxwell.

Crews, K. D. (2012). *Copyright law for librarians and educators: Creative strategies and practical solutions* (3rd ed.). American Library Association.

Dryden, J. (2015). Copyright in the real world: Making it work at your library. ALA Editions.

Fu, Y., Mao, Y., Jiang, S., Luo, S., Chen, X., & Xiao, W. (2023). A bibliometric analysis of systematic reviews and meta-analyses in ophthalmology. *Frontiers in Medicine, 10*, 1135592. https://doi.org/10.3389/fmed.2023.1135592

Ginsburg, J. C. (1990). A tale of two copyrights: Statute of Anne and Berne. *Columbia Law Review, 89*(7), 1733–1752. https://doi.org/10.2307/1122873

Ginsburg, J. C. (2002). A tale of two copyrights: Literary property in revolutionary France and America. In B. Sherman & A. Strowel (Eds.), *Of authors and origins: Essays on copyright law* (pp. 131–160). Oxford University Press.

Machlup, F., & Penrose, E. (1950). The patent controversy in the nineteenth century. *The Journal of Economic History, 10*(1), 1–29. https://doi.org/10.1017/S0022050700051454

Menell, P. S., & Scotchmer, S. (2007). Intellectual property law. In A. M. Polinsky & S. Shavell (Eds.), *Handbook of law and economics*.Vol. 2 (pp. 1473–1570). Elsevier. https://doi.org/10.1016/S1574-0730 (07)02016-5

Modi, R., Vasmatkar, A., & Nandekar, U. P. (2023). Relationship between human rights and copyright law: Bibliometric analysis. *Journal of Intellectual Property Rights, 28*(1), 15–20.

Salam, S., & Senin, A. A. (2022). A bibliometric study on innovative behavior literature (1961–2019). *SAGE Open, 12*(3), 21582440221109589. https://doi.org/10.1177/21582440221109589

Singh, M., & Hasan, N. (2013). Intellectual property: A scientometric study of scholarly output. *DESIDOC Journal of Library & Information Technology, 33*(5), 412–417. https://doi.org/10.14429/djlit.33.5.5090

Smith, K. L. (2014). *Managing copyright in higher education: A guide for academic administrators and library staff*. Wiley.

Sun, H., Liu, J., Chen, B., & Yang, L. (2024). Exploring intellectual property in the digital realm: A bibliometric study on research on the management and protection of data-based intellectual property. *Information, 15*(12), 780. https://doi.org/10.3390/info15120780

World Intellectual Property Organization. (2016). *Understanding intellectual property*. https://www.wipo.int/edocs/pubdocs/en/intproperty/450/wipo_pub_450.pdf

Journal of the University Librarians Association of Sri Lanka, Vol. 28, Issue 2, July 2025, 28-49, DOI: https://doi.org/10.4038/jula.v28i2.8109

Enhancing Public Library Services in Anuradhapura District: A Comprehensive Analysis of Library Services during COVID-19 Pandemic

A.S. Siriwardana[1] and H. Wickramasooriya[2]

ABSTRACT

The COVID-19 pandemic significantly affected public library services globally, including the Anuradhapura district of Sri Lanka. This study explores the challenges public libraries faced during the pandemic and identifies strategies implemented to sustain services. All 34 public libraries in the A were purposively selected for the study, with data collected through a self-administered and semi-structured questionnaire administered to public librarians or a library staff member who represents the librarian. The response rate for the questionnaire was 91.1%, representing 31 public libraries, with three public libraries not responding. Data collected using the questionnaire were quantitative and analyzed using Excel software. The findings reveal that while most libraries experienced reduced patronage (90.3%) and operational challenges such as unavailability of adequate facilities to introduce alternative library services during the pandemic (77.4%) and travel difficulties faced by the staff (71.0%).

[1] Librarian, Rajarata University of Sri Lanka
Email: librarian@rjt.ac.lk, https://orcid.org/0000-0002-5342-5817

[2]Assistant Librarian, Main Library, Rajarata University of Sri Lanka
E-mail: hansamali@lib.rjt.ac.lk, https://orcid.org/0009-0003-7019-3530

Received: 02 January 2025, Accepted revised version: 30 May 2025.

A minority adopted innovative methods such as providing scanned reading materials via WhatsApp (45.5%) and conducting awareness sessions on social media (36.4%). Lack of technical infrastructure (48.3%), inadequate staff training to provide services using new technologies (41.4%) and lack of Internet facilities (34.5%) were prominent barriers to service continuity, with 93.6% of libraries unable to adopt new technological means. Despite these constraints, libraries employed adaptive measures such as roster-based attendance (74.2%), flexible working hours (71.0%), and waived patron fines (87.1%) to address operational challenges. Notably, only 29.0% of libraries collaborated with external institutions during the pandemic, highlighting missed resource-sharing opportunities. The study underscores the need for digital transformation, improved staff training on using technological means when providing library services, and policy frameworks to enhance library resilience during future disruptions. Evidence-based recommendations include increasing digital resource allocations, fostering collaborations, and equipping staff with technical competencies to deliver hybrid library services. By implementing these best practices, public libraries can ensure equitable and uninterrupted access to information, even during unprecedented times of crisis.

Keywords*:* COVID-19 pandemic, Digital transformation, Library resilience, Public libraries, Service continuity

Introduction

Libraries have long been recognized as powerful catalysts for social development, serving as essential information hubs that promote equity, literacy, and lifelong learning. By ensuring free and equitable access to high-quality information in various formats, written, electronic, and audio-visual, libraries contribute significantly to improving the quality of life and fostering democratic participation among citizens.

Across the globe, all types of libraries; national, public, and academic are entrusted with the responsibility of providing inclusive access to information that supports educational and personal development. Public libraries, in particular, have a unique mandate to serve diverse communities by offering resources that encourage reading, learning, and informed decision-making. As Krolak (2006) emphasizes, libraries play a crucial role in cultivating literate environments by providing relevant and engaging reading materials. Echoing this, Musingafi (2012) highlights the pivotal role of public libraries in fostering access to knowledge and wisdom, which in turn drives community development and empowerment.

In this context, libraries stand as foundational institutions in the knowledge society, bridging information gaps and empowering individuals to participate meaningfully in social, educational, and economic spheres.

Since March 2020, all public and academic libraries throughout Sri Lanka have been influenced by the COVID-19 pandemic and affected by travel bans, remote office operations, lockdowns, and social distancing. Most public and academic libraries have tried to provide library services as far as possible during COVID-19. Libraries used different strategies and innovations to provide service at a maximum level and adapt to the situation.

Ultimately, the COVID-19 pandemic raises a chance for libraries and librarians to rethink library services and innovations.

According to the data from the Statistical Handbook on Libraries in Sri Lanka (2018), there are 34 public libraries in the Anuradhapura District. Most were severely impacted and unable to maintain service delivery mechanisms due to the resource-constrained conditions in the rural areas in Anuradhapura. Although a few studies focus on Sri Lankan rural public libraries and their specific responses during the COVID-19 crisis (Perera, 2020), there is a lack of empirical evidence in the literature on a comprehensive analysis of the response of public libraries in A towards the COVID-19 pandemic.

Hence, evidence-based data is crucial to facilitating an effective planning process for a future pandemic within the public library sector. Thus, this study would contribute to filling that gap by documenting real-world challenges and adaptive strategies used by rural public libraries in Sri Lanka and providing evidence-based insights to inform policy, planning, and crisis preparedness in the public library sector.

The objectives of this study are as follows,

- To assess the impact of the COVID-19 pandemic on library services and community engagement among public libraries in A
- To identify challenges faced by public libraries during the pandemic
- To identify the practices used by public libraries in the A during the COVID-19 pandemic to mitigate the challenges they faced

Literature Review

Public libraries play a key role in creating a knowledgeable and literate community by providing various forms of reading materials for all ages in a community. They hold a social responsibility to assist in finding, using and interpreting appropriate information that provides opportunities for lifelong learning, literacy enhancement, informed citizenship, recreation, creative imagination, individual research, critical thinking, and ultimately, empowerment in a highly complex world (Krolak, 2006).

Further, Scott (2011) has emphasized the importance of public libraries in terms of community development. They have highlighted five ways public libraries could contribute towards community building, such as serving as a channel to access information and learn, encouraging social inclusion and equity, fostering civic engagement, creating a bridge to resources and community involvement, and promoting economic vitality within the community (Scott, 2011).

Public libraries serve as community institutions and places for social gatherings, promoting democracy, equality, and social justice, expanding access to information, spreading culture and knowledge, and fostering meaningful and educational leisure time (Aabø, 2005).

Scientific literature has suggested that public libraries can go beyond their traditional role of keeping and disseminating knowledge during crises and disasters. According to Veil and Bishop (2014), public libraries can offer support during difficult times, such as natural disasters and health disasters like the COVID-19 pandemic, by enhancing their programs and services. Libraries can also offer new services that directly benefit crisis management initiatives. For example, libraries can donate their time and space to provide

emergency shelter and relief during natural disasters (Merenda, 2015). Moreover, they can offer vital information and guidance during public health emergencies like the COVID-19 pandemic. (Featherstone et al., 2012)

Although public libraries embrace a crucial role in society as knowledge keepers and disseminators, their role became crucial and vulnerable during the COVID-19 pandemic. The COVID-19 crisis has put public libraries in a different position, with their premises occasionally closed because of physical distancing efforts. Additionally, libraries' roles and activities were disrupted throughout the crisis. Furthermore, library staff were affected by being temporarily unemployed or their salaries being interrupted during the COVID-19 pandemic, resulting in negative motivation among library staff (Haasio & Kannasto, 2020). In terms of positive changes caused by the pandemic, some public libraries were able to introduce new online services, and the library staff were keen to develop their skills in producing content on social media (Haasio & Kannasto, 2020).

According to the scientific literature, most public libraries worldwide shifted their services to more digitalized forms during the COVID-19 crisis by expanding their online collections and programming options (Haasio & Kannasto, 2020). International Federation of Library Associations and Institutions **(**IFLA, 2021) also supports this evidence by highlighting the libraries' worldwide transition to digital services such as providing e-books, virtual literacy programs, and online reference services during the COVID-19 crisis.

While most public libraries in developed countries positively faced the COVID-19 pandemic, the situation in the developing countries was different. For instance, the majority of libraries in Indonesia did not have a

preparedness plan for a disaster (Rachman, 2020). According to Kaur (2016), the majority of the university libraries in India and Pakistan also did not focus on library disaster planning. Moreover, a study based on Nigeria revealed that Nigerian public libraries faced challenges to offer maximum and effective library service due to poor reading culture, passive nature of librarians, negative disposition of the society towards library and information issues, poor funding for library education and library development, poor technologically driven library and information services amongst others (Ameh, et al., 2021). Ebijuwa et al., (2021), also stated that African libraries struggled with poor Internet, lack of devices, and digital illiteracy during the COVID-19 pandemic. In terms of the Sri Lankan context, Perera (2020) highlighted that digital exclusion and inadequate infrastructure limited remote service delivery of the public libraries in rural Sri Lanka.

It is evident that public libraries worldwide have demonstrated resilience and adaptability during crises, such as the COVID-19 pandemic, by introducing innovative digital services and expanding their role in community support and information dissemination. While developed countries transitioned effectively to online modes of service delivery, public libraries in many developing nations, including parts of Asia and Africa, encountered significant challenges due to a lack of infrastructure, inadequate disaster preparedness, and limited digital literacy. In Sri Lanka, rural libraries, in particular, faced constraints in offering uninterrupted services, primarily due to digital exclusion and infrastructural limitations. Despite these documented experiences, there is a noticeable lack of localized studies examining the specific strategies adopted by public libraries in districts such as Anuradhapura during the pandemic. Furthermore, there is limited research on the effectiveness of these service adaptations and the lessons learned to

enhance resilience in future crises. Therefore, this study aims to fill this gap by comprehensively analyzing how public libraries in the Anuradhapura District responded to the COVID-19 pandemic, assessing the impact of the pandemic on library services and staff, and identifying opportunities for future service enhancement and crisis preparedness.

Research Design and Methods

All the public libraries (34) in Anuradhapura District were purposively selected for the study. The librarian or the respective library staff member representing the librarian was purposively selected from each library, and they were considered as the information provider for the study. A semi-structured and self-administered questionnaire was developed as the data collection tool, and Sinhalese language was used as the primary language to collect data via the questionnaire. The response rate for the questionnaire was 91.1%, representing 31 public libraries, with three public libraries not responding. Data collected using the questionnaire were quantitative and analyzed using Excel software.

Results

Demographic characteristics of the study population

The data presented in Table 1 reflects the distribution of library types across various categories. A dominant proportion (96.8%) of surveyed libraries is the Pradeshiya Sabha libraries. A smaller proportion (3.2%) falls under the MahaNagara Sabha category, while the Nagara Sabha and "Other" categories report no representation in the sample.

Table 1

Type of Library

Library Type	MahaNagara Sabha	Nagara Sabha	Pradeshiya Sabha	Other
Percentage	3.2 (n=1)	0 (n=0)	96.8 (n=30)	0 (n=0)

According to Table 2, the majority of libraries serve between 1001 and 5000 patrons (58.0%), followed by libraries with fewer than 500 patrons (22.6%). A small percentage of libraries cater to 5001-10000 patrons (12.9%) and 20001-25000 patrons (3.2%). No libraries fall within the 10001-15000 and 15001-20000 patron ranges, indicating a lack of libraries with higher patronage.

Table 2

Number of Patrons Registered in Libraries

Number of Patrons	Less than 500	501-1000	1001-5000	5001-10000	10001-15000	15001-20000	20001-25000
Percentage (%)	22.6 (n=7)	3.2 (n=1)	58.0 (n=18)	12.9 (n=4)	0.0 (n=0)	0.0 (n=0)	3.2 (n=1)

The data presented in Table 03 indicates that all libraries surveyed provide printed books, confirming their universal availability. Printed magazines (54.8%) and newspapers (90.3%) are also widely accessible, whereas non-printed magazines and newspapers are notably unavailable (0.0%). Libraries show moderate provision of audio-visual materials (45.2%) and limited availability of non-printed books (9.7%) and other materials such as map collections, newspaper article collections, etc. (3.2%).

Table 3

Types of Reading Materials Available in Libraries

Reading Material Type	Percentage (%)
Printed Books	100.0 (n=31)
Non-Printed Books	9.7 (n=3)
Printed Magazines	54.8 (n=17)
Non-Printed Magazines	0.0 (n=0)
Printed Newspapers	90.3 (n=28)
Non-Printed Newspapers	0.0 (n=0)
Audio-Visual Materials	45.2 (n=14)
Other Materials	3.2 (n=1)

The data indicates that library attendants are available in the majority of libraries, accounting for 93.5%. Librarians and other staff comprise 22.6%, while library information assistants constitute a much smaller proportion, at 3.2% (Table 4).

Table 4

Availability of Staff in Libraries

Staff Designation	Percentage (%)
Librarian	22.6 (n=7)
Library Information Assistant	3.2 (n=1)
Library Attendant	93.5 (n=29)
Other Staff	22.6 (n=7)

Library operations during the COVID-19 pandemic period

The data shows that the majority of libraries (90.3%) were open for public intermittently during the pandemic. A few libraries (6.5%) remained open for public regularly, while 3.2% were closed during this period.

Table 5

Status of Library Opening during the Pandemic

Status of Library Opening	Percentage (%)
Yes, regularly	6.5 (n=2)
Yes, but periodically	90.3 (n=28)
No	3.2 (n=1)

Table 6 presents the impact of the pandemic on library service demand. While the vast majority of libraries (93.6%) experienced a decrease in demand, a small percentage (3.2%) experienced an increase in demand or maintained unchanged levels.

Table 6

Impact of the Pandemic on Library Service Demand

Impact on Library Service Demand	Percentage (%)
Demand increased	3.2 (n=1)
Demand decreased	93.6 (n=29)
Demand remained unchanged	3.2 (n=1)

Table 7 indicates that 35.5% of libraries adopted alternative methods to provide services, while a majority (64.5%) did not implement such methods during the pandemic.

Table 7

Usage of Alternative Methods to Provide Services during the Pandemic

Usage of Alternative Methods	Percentage (%)
Used alternative methods	35.5 (n=11)
Not used alternative methods	64.5 (n=20)

Table 8 shows the various alternative methods used by libraries during the pandemic. The most commonly used methods were sending scanned reading materials via the WhatsApp platform (45.5%) and using platforms such as Facebook for awareness sessions (36.4%), while 9.1% of libraries used email for information requests, provided online resource usage facility provided interlibrary loan facility and conducted awareness programs via Zoom.

Table 8

Types of Alternative Methods Used to Provide Library Services during the Pandemic

Alternative Method Used	Percentage (%)
Sent scanned reading materials via WhatsApp	45.5 (n=5)
Requested information via email	9.1 (n=1)
Conducted awareness sessions via Facebook	36.4 (n=4)
Provided online resource usage facility	9.1 (n=1)
Provided interlibrary loan facility	9.1 (n=1)
Conducted awareness programs via Zoom	9.1 (n=1)

Approximately 29.0% of the surveyed libraries reported collaborating with other institutions during the pandemic. Conversely, a majority, 71.0%, did not establish such collaborations (Table 9).

Table 9

Collaborations with other Institutions during the Pandemic

Collaboration Status	Percentage (%)
Collaborated	29.0 (n=9)
Did not collaborate	71.0 (n=22)

The data in Table 10 reveals that 3.2% of libraries experienced increased fund allocations during the pandemic, while the majority of libraries reported a decrease of 58.1 %. Another 38.7% have claimed no change in their funding allocations.

Table 10

Changes in Library Fund Allocations during the Pandemic

Change in Fund Allocations	Percentage (%)
Allocations increased	3.2 (n=1)
Allocations decreased	58.1 (n=18)
Allocations remained unchanged	38.7 (n=12)

Library Communication Methods used with Patrons during the pandemic

Almost all libraries (96.8%) communicated with patrons during the pandemic. The most common communication method was using notice boards (93.3 %), followed by SMS (70.0%) and social media platforms (53.3%). Less frequently used methods to communicate with patrons during the pandemic include emails (10.00%) and library websites (10.00%).

Table 11

Methods of Communication with Patrons during the Pandemic

Communication with Patrons	Percentage (%)
Yes	96.8 (n=30)
No	3.2 (n=1)
If Yes, Used Communication Methods	
Notice Boards	93.3 (n=28)
Library Website	10.0 (n=3)
Library Social Media Platforms	53.3 (n=16)
Emails	10.0 (n=3)
SMS	70.0 (n=21)

Use of New Technological Means to Provide Services during the Pandemic

The majority of libraries (93.6%) did not use new technologies to provide services during the pandemic. Libraries that used new technologies to provide services (6.5%) provided online database search facilities (100%) and conducted Zoom programs (50.0%) as their new technological means.

Table 12

Use of New Technological Means to Provide Services during the Pandemic

Use of New Technological Means	**Percentage (%)**
Yes	6.5 (n=2)
No	93.6 (n=29)
If Yes, Type of Technology used	
Online database searching facilities	100 (n=2)
Conducted Zoom programmes	50.0 (n=1)
If No, Reasons for not using Technology	
Lack of training for the staff	41.4 (n=12)
Lack of technical devices	48.3 (n=14)
Lack of Internet facilities	34.5 (n=10)
Low level of digital literacy among staff	24.1 (n=7)
Lack of financial allocations	3.4 (n=1)
Low demand for digital services	3.4 (n=1)
No digitalized information to provide	10.3 (n=3)
Other	20.7 (n=6)

For those who did not use new technologies, the main challenges were the lack of technological devices (48.3%), staff training (41.4%), and Internet access (34.5%). Other barriers included a low level of digital literacy among staff (24.1%), absence of digitalized resources (10.3%), and minimal financial allocations or low demand for digital services (3.4%).

Challenges Libraries Faced during the Pandemic

The most common challenges libraries faced during the pandemic included limited patron attendance (90.3%), lack of facilities to introduce new and alternative services (77.4%), and travel difficulties faced by staff (71.0%). Difficulties to maintain social distance due to limited library space (58.1%), being infected by the Corona virus (both staff and their family members) (58.1%), unavailability of adequate staff to sanitize the library premises (54.8%), lack of guidance on maintaining the library during the pandemic (54.8%), lack of knowledge to introduce new and alternative library services during the pandemic (54.8%), and lack of support from the administrative bodies (52.0%) were also prominent challenges.

Table 13

Challenges Libraries Faced during the Pandemic

Challenges	Percentage (%)
Hesitation to report to work among library staff	42.0 (n=13)
Travel difficulties faced by the library staff	71.0 (n=22)
Difficulties in paying salaries	6.5 (n=2)
Unavailability of sanitary equipment	22.6 (n=7)
Unavailability of adequate staff to sanitize the library premises	54.8 (n=17)
Difficulties in maintaining social distance due to limited library space	58.1 (n=18)
Lack of facilities to provide sanitary services for the staff and the patrons	42.0 (n=13)
Limited patron attendance, although the library was open	90.3 (n=28)
Lack of guidance on maintaining the library during the pandemic	54.8 (n=17)
Lack of facilities to introduce new and alternative library services during the pandemic	77.4 (n=24)
Lack of knowledge to introduce new and alternative library services during the pandemic	54.8 (n=17)
Lack of support from the administrative bodies	52.0 (n=16)
Lack of adaptation to the pandemic among staff	35.5 (n=11)

Being infected by the coronavirus (both staff and their family members)	58.1 (n=18)
Other challenges	0.0 (n=0)

Methods used to tackle challenges brought by the Pandemic

Libraries had implemented various strategies to address the challenges posed by the pandemic. According to Table 14, a significant effort was made to alleviate financial pressures on patrons, with 87.1% of libraries writing off fines during the lockdown period. Further, introducing roster-based attendance mechanisms (74.2%), introducing flexible working hours for the staff (71.0%), establishing sanitary facilities at the library (67.7%), conducting awareness sessions for library staff (64.5%), and establishing social distancing mechanisms at the library (58.1%) were also among commonly implemented measures to tackle challenges brought by the pandemic. However, digital services were introduced less frequently, with only 9.7% of libraries adopting this approach.

Table 14

Methods used to tackle Challenges brought by the Pandemic

Challenges tackled	Percentage (%)
Introduced a roster-based attendance mechanism for library staff	74.2 (n=23)
Conducted awareness sessions for library staff	64.5 (n=20)
Introduced flexible working hours for library staff	71.0 (n=22)
Provided transport facilities for the library staff	13.0 (n=4)
Established sanitary facilities at the library	67.7 (n=21)
Established social distancing mechanisms at the library	58.1 (n=18)
Introduced digital library services	9.7 (n=3)
Wrote off patrons' fines during the lockdown period	87.1 (n=27)
Other measures	3.2 (n=1)

Discussion

The findings of this study provide a comprehensive view of the challenges faced by libraries in Sri Lanka during the COVID-19 pandemic and the actions they adopted in response to them. The pandemic created significant operational, financial, and logistical challenges for libraries and highlighted gaps in infrastructure, resources, and staff readiness that affected the ability to transition to digital services.

The majority of libraries surveyed were classified as local council libraries, with a significant concentration serving between 1001 and 5000 patrons. This suggests that libraries mainly serve moderate-sized communities, often in rural or semi-urban areas, with limited resource access. Despite the widespread availability of printed materials, such as books, newspapers, and magazines, the limited provision of non-printed materials highlights a significant gap in digital resources. This gap was particularly apparent during the pandemic, when physical access to libraries was restricted and digital services were not adequately developed or implemented.

During the pandemic, the majority of libraries operated periodically, with only a small proportion remaining open regularly. This reflects the broader trend of limited access to physical spaces due to lockdowns and social distancing measures. As a result, the demand for library services significantly decreased, with nearly 94% of libraries experiencing reduced patronage. The lack of demand highlights libraries' difficulties maintaining contact with their communities during such a crisis.

In response to these challenges, some libraries sought alternative methods of service delivery. While a significant proportion (64.52%) of libraries did not adopt alternative methods, 35.48% implemented strategies such as sending scanned materials via WhatsApp or conducting awareness sessions via Facebook. These findings highlight the ability of some libraries to adapt to digital communication tools, but they also reveal the barriers many libraries face in utilizing such platforms. The relatively low use of new technologies, such as online databases or Zoom programs (6.45%), further highlights library staff's limited technical capacity and training, complicated by the lack of infrastructure such as Internet access and technological devices. In terms of that, some studies have highlighted the importance of digital transformation in libraries during such a crisis. According to the International Federation of Library Associations and Institutions **(**IFLA, 2021), libraries worldwide have transitioned to digital platforms to maintain service delivery, providing e-books, online educational resources, and virtual literacy programs during COVID-19. Moreover, Smith (2020) highlighted the need for regular training and professional development among library staff to empower them with skills to deliver digital services to their library users.

The inadequate knowledge and resources available to libraries further compounded the challenges related to technology adoption. Many libraries reported a lack of facilities and guidance on introducing new and alternative services during the pandemic, with the most significant barriers being insufficient staff training, limited digital literacy, and financial constraints. These challenges were also reflected in the libraries' communication methods. While most libraries maintained communication with their patrons via traditional methods such as notice boards and SMS, fewer utilized more

modern social media or email channels. This reliance on basic communication tools underscores the limitations in technological infrastructure and staff readiness to engage with more advanced digital platforms.

In terms of financial sustainability, many libraries experienced reduced funding allocations, which further hampered their ability to implement new services or adopt technology during the pandemic. Despite these financial challenges, libraries tried to alleviate the burden on patrons by writing off fines, which 80% of libraries took. This gesture eased financial pressures on patrons and demonstrated the library's commitment to maintaining its services, even under challenging circumstances.

Libraries also faced considerable operational challenges during the pandemic, including staff travel difficulties, difficulty maintaining social distancing within limited spaces, and difficulty ensuring adequate sanitation. These operational difficulties were compounded by a lack of sufficient staff to manage sanitation measures, with 45.16% of libraries reporting issues in maintaining cleanliness and hygiene standards. The challenges were also evident in the hesitation among staff to report to work (35.48%) and the widespread impact of staff or their family members being infected with the virus (58.06%). These factors significantly disrupted library operations and limited their ability to serve patrons effectively.

Despite these obstacles, libraries implemented several strategies to manage the challenges. Roster-based attendance systems, flexible working hours, and the establishment of sanitary and social distancing measures were some of the most common approaches adopted. These measures helped

ensure that libraries could continue functioning while protecting staff and patrons. However, the limited adoption of digital services, with only 10% of libraries implementing such measures, points to a critical area for future development. The pandemic has highlighted the need for libraries to invest in digital infrastructure, provide staff training, and develop strategies for delivering services through digital means in times of crisis.

Conclusion

The COVID-19 pandemic presented libraries in Sri Lanka with unprecedented challenges, many of which were compounded by preexisting limitations in infrastructure, staff training, and financial resources. However, the measures taken by libraries to adapt to the situation, such as roster-based attendance, flexible working hours, and communication with patrons, demonstrate their resilience.

Further, this study provides empirically based recommendations designed to guarantee the sustainability of libraries, enhance staff capacity, and facilitate uninterrupted access to information during potential future disruptions. Investment in digital infrastructure, broadening training programs, and building strategic partnerships with potential stakeholders are also essential to advancing inclusive, technology-driven library services in the post-pandemic era.

Reference

Aabø, S. (2005). The role and value of public libraries in the age of digital technologies. *Journal of Librarianship and Information Science, 37*(4), 205–211. https://doi.org/10.1177/0961000605057855

Ameh, G. J., Ukwuoma, H. C., & Oye, P. O. (2021). COVID-19 pandemic and evolving library and information services: Lessons for Nigeria. *International Journal of Development and Management Review, 16*(1), 75–87.

Ebijuwa, A. S., Oyelude, A. A., Abubakar, A. M., Nongo, C. J., & Sani, A. H. (2021). Sensitization and promotion of information literacy on COVID-19 pandemic by librarians in public university libraries in Southwestern Nigeria. *Library Philosophy and Practice, 2021*, Article 5462. https://digitalcommons.unl.edu/libphilprac/5462/

Featherstone, R. M., Boldt, R. G., Torabi, N., & Konrad, S. L. (2012). Provision of pandemic disease information by health sciences librarians: A multisite comparative case series. *Journal of the Medical Library Association, 100*(2), 104–112. https://doi.org/10.3163/1536-5050.100.2.008

Haasio, A., & Kannasto, E. (2020). COVID-19 and its impact on Finnish public libraries. *Qualitative and Quantitative Methods in Libraries, 9*(3), 3–19. https://www.qqml-journal.net/index.php/qqml/article/view/639/576

International Federation of Library Associations and Institutions (IFLA). (2021). Libraries and the pandemic: Evolving trends. https://www.ifla.org

Kaur, T. (2016). Disaster management in university libraries of India and Pakistan. *Pakistan Journal of Information Management & Libraries, 17*, 155–161. https://pjiml.pu.edu.pk/jo/index.php/pjiml/article/view/98

Krolak, L. (2006). The role of libraries in the creation of literate environments. *International Journal of Adult and Lifelong Education, 4*(1/4), 5–19.

Merenda, P. F. (2015). Libraries as community support centers in times of crisis. *Public Library Quarterly, 34*(4), 327–333. https://doi.org/10.1080/01616846.2015.1082827

Musingafi, M. C., & Chiwanza, K. (2012). The role of public libraries in promoting literacy in Zimbabwe. *Information and Knowledge Management, 2*(7), 52–60.

Perera, S. (2020). Digital exclusion in Sri Lankan public libraries during the pandemic. *Sri Lanka Library Review, 34*(2), 45–53.

Rachman, A. (2020). Disaster preparedness in Indonesian libraries: Current status and future directions. *Library Philosophy and Practice, 2020*, Article 4175. https://digitalcommons.unl.edu/libphilprac/4175

Scott, R. (2011). The role of public libraries in community building. *Public Library Quarterly, 30*(3), 191–227. https://doi.org/10.1080/01616846.2011.599283

Smith, A. (2020). Digital skills for librarians in a post-COVID world. *Library Management Quarterly, 45*(4), 23–29.

Veil, S. R., & Bishop, B. W. (2014). Opportunities and challenges for public libraries to enhance community resilience. *Risk Analysis, 34*(4), 721–734. https://doi.org/10.1111/risa.12130

Journal of the University Librarians Association of Sri Lanka, Vol. 28, Issue 2, July 2025, 50-88, DOI:https://doi.org/10.4038/jula.v28i2.8110

Assessing the Readiness of Tamil Medium LIS Diplomats for Online Learning: A Focus on the Sri Lanka Library Association

Alahakoon, Champa N. K[1]

ABSTRACT

The Sri Lanka Library Association (SLLA) is the only national body for Library and Information Science (LIS) professionals in Sri Lanka, and it has recently transitioned its educational programs to an online mode. However, due to the limited studies conducted to measure the consciousness of online courses, this study attempts to measure the perception of online learning among Tamil-medium students enrolled in the Higher Diploma (HDIPLIS) course at SLLA. The objectives were formulated to assess the readiness of Tamil-medium students for online learning by analyzing their satisfaction levels, aspects of the course, teaching patterns, and the challenges they encountered in online learning. A survey research method was employed, and a structured questionnaire was disseminated via Google Forms to all 61 Tamil-medium students enrolled in the HDIPLIS program. The response rate was recorded as 95% (n =58). Data analysis was performed using SPSS, employing the Wilcoxon signed-rank test and Rosenthal *r*-value tests to determine the effect size of the comparison.

[1] Deputy Librarian, Main Library, University of Peradeniya.
Email: champa098kumari@gmail.com, https://orcid.org/0000-0002-7489-3206

Received: 02 January 2025, Accepted revised version: 30 May 2025.

Accordingly, 70% of students strongly agreed or agreed with online learning, and 89.7% mentioned that they were able to participate conveniently from home. Further, 79.3% ensured the security of the learning, and 75.9% mentioned that it helps to alleviate transportation-related challenges. The readiness for online learning was measured through the devices utilized; 82.8% used a smartphone, while 17.2% used laptops or tablets for online learning. The challenges faced by the students, as reported, included difficulty hearing lectures (74.2%), not easily connecting (63%), poor internet connectivity (63%), and the high cost of required services and equipment (52.1%). Over 50% of students were satisfied with assignment-based evaluation, and (55.2%) preferred the teaching methods. To enhance smooth online learning, the study recommends fostering more interaction between Tamil-medium lecturers and students, and the integration of innovative technologies could improve student engagement and learning outcomes.

Keywords: Higher Diploma, LIS, Online Learning, Sri Lanka Library Association, Tamil-medium, Student Preparedness

Introduction

The emergence of online learning has propelled developing countries in a new direction, moving beyond traditional classrooms. However, it is not easy for developing countries (Toquero, 2020), including Sri Lanka, to fully reap the benefits of e-learning due to several reasons, such as limited infrastructure. Moreover, several developing countries likely rely on outdated ICT systems (Weerarathna et al., 2023). This drastic change in Sri Lanka's higher education sector has slowly facilitated a shift from conventional learning practices to an online setup. As the epidemic continues to spread, it has profoundly affected the continuation of education at all levels (Tarkar, 2020; Kang, 2021; Cui et al., 2023). Ratten (2023) highlighted a growing interest in hybrid learning, incorporating both direct physical and virtual engagement. This new shift has introduced innovative teaching methods and transformed the education system from traditional to online education, even in Sri Lanka (Weerarathna et al., 2023; Bao, 2020; Hettiarachchi et al., 2021; Urme & Barua, 2023; Cui et al., 2023). New tools for online educational technology and various online teaching tasks have significantly revolutionized the teaching experience (Lee & Han, 2021; Rachzeeth, 2019; Ratten, 2023). Through this online teaching, LIS professionals also developed new skills in designing and developing e-learning materials and teaching, as well as new ways of working with each other (Ishwar, 2019). Consequently, educators have incorporated new emerging technologies as an integral part of the educational experience, reshaping the educational service in Sri Lanka with lasting effects on its future (Wood, 2022; Tarkar, 2020).

Amidst this trend, the SLLA, the only national body for LIS professionals, transitioned to an online delivery system to provide professional courses for its students. Although the SLLA rapidly shifted to an online delivery mode, similar Sri Lankan-related studies (Nafrees, 2020; Hayashi, 2020; Hettiarachchi, 2021) highlighted the challenges faced by developing countries in implementing online learning. These challenges include the conversion and delivery of teaching modules in online mode, limited infrastructure, a lack of a conducive teaching and learning environment, and inadequate competency in handling information technology, which have been formidable challenges during this transformation (Fernando & Bandara, 2021; Jameel, 2020; Samsudeen, 2019; Jameel, 2018). Moreover, education inequalities pose a threat to the continuity of the education system at a time of unexpected closures of the educational system (UNESCO, 2020b). In line with other developing countries, these reasons are also common to the Sri Lankan education system. Although the SLLA was unprepared for online teaching and learning, the rapid nationwide adoption of online education compelled it to adopt this approach to continue education. With this background, in 2021, the SLLA began preliminary steps to integrate online platforms into the teaching of its education programs, which had previously been delivered through conventional physical-based methods. By 2023, SLLA acquired Zoom and Google Meet to facilitate online learning for students without interrupting education across Sinhala, Tamil, and English mediums. Highlighting the background, this article aims to assess students' preparedness to adopt online learning in the evolving educational landscape.

Problem Statement

Several papers have already been published, and researchers in educational institutions have already conducted several studies on the effectiveness and importance of online learning. In parallel to online learning, the SLLA also initiated its teaching mode using advanced ICT technology, adapting Zoom and Google Meet platforms to meet students' educational needs. Although online learning has been implemented across all three languages, no study has yet been conducted to measure the readiness and effectiveness of online learning from the perspective of SLLA Tamil-medium students. This study, therefore, aims to analyze the important gap in the literature, particularly at the readiness of Tamil-medium LIS students who enrolled to follow the SLLA Higher Diploma I & II course of the 2023/2024 academic year.

Objectives

The article addresses the research gap by investigating the readiness of SLLA Tamil-medium students for online learning. Specially, it aims;

- To assess the readiness of Tamil-medium students enrolled in the HDIPLIS online course at SLLA, with a focus on accessibility, ease of participation and e-learning environment.
- To study the level of satisfaction among Tamil-medium participants regarding their online learning experience in the HDIPLIS program.
- To evaluate key components of the HDIPLIS online course, focusing on course duration, assessment methods, and the role and effectiveness of online teaching staff.

- To measure the teaching patterns and involvement of academic and administrative staff in supporting Tamil medium students during online learning.
- To identify and categorize the main challenges faced by Tamil-medium students in accessing and participating in online learning, including technological, pedagogical, linguistic, and infrastructural barriers.

Contextual Background

The SLLA is a recognized professional association in Sri Lanka, established in 1960 as the Ceylon Library Association. In 1961, the SLLA initiated library education for LIS professionals (Lankage, 1989). By 2024, SLLA marked its 63rd year of providing education, with high improvements in the library science courses. SLLA is recognized as the only national professional library and information science association in Sri Lanka that provides formal education for LIS professionals, including public librarians and library assistants. Furthermore, the government of Sri Lanka recognizes SLLA's professional qualifications for relevant recruitment processes. The association offers two primary LIS programs: Diploma in LIS and Higher Diploma in LIS, which are completed over a three-year study period. These programs are delivered through two primary teaching methods: face-to-face and distance learning. Distance learning is supplemented with lecture notes and physical workshops provided to students. However, Tamil-medium students can access it through face-to-face and online teaching modes. During the pandemic, SLLA introduced innovative online education methods, which remain in practice due to low student enrolment at some countrywide centers. The education program has been modernized to suit online environments, utilizing platforms such as Zoom and Google Meet for lecturer and student interactions. Awareness programs were conducted to

familiarise students and lecturers with online learning practices, as it has become the primary solution for instruction. This shift addresses the challenges posed during the pandemic and continues to meet the current demands despite the challenges both lecturers and students face.

Literature Review

Before the pandemic, almost all courses were taught through conventional teaching methods, such as face-to-face instruction, which facilitated interaction between the teacher and students (Fernando & Bandara, 2021). This has changed to incorporate the use of digital technology in education (Hayashi, 2020). Weerarathne et al. (2023) mentioned that the Sri Lankan education sector adopted e-learning as a solution for the continuing education process. According to the United Nations Educational, Scientific and Cultural Organisation (UNESCO), many students were unable to continue their daily school life due to the COVID-19 pandemic (Cui et al., 2023). Regarding this, South Eastern University of Sri Lanka conducted a survey (Nafrees et al., 2020) and indicated that out of 310 student samples; more than 50% of the students were satisfied with online education during the lockdown. The reason was that, despite their limited experience, they continued their academic work safely; course materials could be accessed at any time, and students preferred continuing their academic work over postponing it. Further, Weerarathne et al. (2023) indicated the success of online education in non-state universities in Sri Lanka. They mentioned that a strong positive correlation exists between e-learning and students' academic success. More specifically, regression analysis confirmed that e-learning has a positive impact on academic success. Borgohain et al. (2020) noted that Indian LIS education is also slowly but steadily moving in the direction of online learning, and the

availability of appropriate and adequate infrastructure has added momentum to LIS E-learning in India, including the Northeastern region. Education inequalities are also a threat to the continuity of the education system at a time of unexpected closures of the educational system (UNESCO, 2020b). Therefore, the nature of e-learning explains the variations in student academic success in non-state higher education institutes in Sri Lanka (Hayashi et al., 2020).

Student success and satisfaction in online learning and face-to-face learning

Students' academic success is defined as academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skill and competencies, persistence, attainment of educational outcomes, and post-college performance (Kuh et al., 2006). Ashby (2011) highlighted three educational modes face-to-face, online, blended learning, and compared students' academic performances. His study revealed that students enrolled in face-to-face teaching methods scored lower than those in online and blended learning methods, with F2F students achieving the lowest course averages. Furthermore, Hogdal et al. (2021) noted that students are naturally more comfortable with online teaching formats due to their involvement with technology used for educational purposes. The study further found that online learning is the most effective method, as most students performed well in their final examinations. On the other hand, the e-learner can learn from the convenience of their own place, even from home, the office, while travelling, or literally from anywhere (Kumbhar, 2009).

Hayashi et al. (2020) conducted a study at higher education institutions in Sri Lanka during the COVID-19 pandemic, which indicated that nearly 90% of students were highly or moderately satisfied with online education. The use of equipment for online learning was also analyzed, and it was found that many students owned smartphones; however, access to laptops and desktops with video cameras was limited. Approximately 90% of students reported owning a smartphone, whereas only 55% of students in state institutions and 66% in non-state higher education institutions reported owning a laptop (Hayashi et al., 2020).

Despite the advantages, some studies identified factors contributing to negative student satisfaction. Butz (2015) noted that technology-related emotions, such as fear, anger, and helplessness, affect students' satisfaction with online learning. Conversely, Weerarathna et al. (2023) found a positive moderating effect of e-learning on student satisfaction and academic success. Aristovnik (2020) conducted a global survey and found that students were the most satisfied with real-time video conferences (3.30%), followed by video recording (3.26%), while they were the least satisfied with audio recording (2.98%). Regarding lecturer responsiveness, students indicated that lecturers had been preparing regular assignments, followed by lecturers' timely responses to questions and openness to suggestions. Overall, 57.6% of students were satisfied or very satisfied with the support provided by the teaching staff, although 94% reported poor communication with the teaching staff. Regionally, Pakistan stands out as one of the bottom-ranked countries in terms of online delivery mode, which is related to negative experiences with the rapid transition to online classes (Aristovnik, 2020).

In contrast, a survey conducted by Nafrees et al. (2020) at the South Eastern University of Sri Lanka revealed that, out of 310 students, over 50%

were satisfied with online education during the lockdown period. This satisfaction was primarily due to the ability to continue academic work safely and access course materials at any time. Selvaras (2020) similarly suggested that undergraduates prefer the online education system due to these advantages and further revealed that only 21% of students had prior experience with learning entirely online. Gismalla (2021) further stated that two-thirds of students supported E-learning sessions and exams during the COVID-19 pandemic.

Obstructions or challenges faced in online learning

According to UNESCO reports (2020a & 2020b), the COVID-19 pandemic interrupted face-to-face classes for at least 9 out of 10 students worldwide. Globally, 195 countries have closed all schools, affecting over 1.5 billion students from pre-primary to higher education. Approximately 50% (826 million) of students worldwide lack access to a computer at home, and 43% (706 million) lack Internet access. Additionally, approximately 56 million students are unable to use mobile phones due to the lack of mobile network coverage. Furthermore, Sahu (2020) mentioned that many students may not have the correct setup, such as computers and other IT equipment, as well as a high-speed Internet connection, at their homes. Those who manage to go home are concerned that their studies will be interrupted. He also pointed out that courses such as sports, nursing, laboratories, music, and art are particularly challenging or impossible to teach and learn through online learning methods. Additionally, UNESCO emphasized that students, parents, and teachers require training to deliver online learning effectively; however, such support is particularly limited in developing countries (2020b).

In Sri Lanka, a study conducted by Hayashi et al. (2020) revealed that 70% of students faced challenges due to poor Internet connectivity in their online learning. Education inequalities pose a threat to the continuity of the education system at a time of unexpected closures of the educational system (UNESCO, 2020b). The reason was identified as a limited number of computers, internet access, mobile network access, and a lack of ICT-trained teachers in developing countries (O'Hagan, 2020). Therefore, although online teaching and learning offer a good opportunity to continue education during the pandemic, they are particularly challenging for developing countries (Sun et al., 2020). Madhubhashini (2021) identified several issues affecting students, including technical difficulties, ethical concerns, unstable coverage, background noise, limited face-to-face interactions, and high Internet charges, which affected students across different specializations. The unavailability of laptops, mobile phones, or Internet connections, as well as limited IT knowledge, are some of the challenges. More specifically, the barrier to using the English language was a particular issue for students outside Colombo and adult learners.

Significance of the study

The findings of this study serve as a guideline for SLLAs in selecting suitable strategies to enhance the modern e-learning process and facilities. This approach will enable SLLA to understand the value of online learning in relation to academic success by examining the key areas specified in the research. Additionally, the study may assist lecturers in identifying the factors that influence their ability to deliver online learning courses effectively. Moreover, the findings will benefit students by enhancing their key study areas, which can positively and practically contribute to their academic success in Diploma and Higher Diploma courses.

Materials and Methods

This study targeted Tamil-medium students enrolled in the Higher Diploma in Library and Information Science (HDIPLIS I & II) program at the SLLA during the academic years 2022 and 2023. These cohorts experienced a sudden transition to online learning due to the COVID-19 pandemic, making them a relevant population for assessing readiness and challenges in online education.

A structured questionnaire was developed and distributed via Google Forms to all registered Tamil-medium students (N=61) who were geographically dispersed across the South Eastern, Eastern, Northern, and Central provinces of Sri Lanka (Sri Lanka Library Association, 2024). A total of 58 students responded, resulting in a high response rate of 95%. Given the small population size, data were analyzed collectively without year-wise disaggregation. The questionnaire consisted of multiple Likert-scale items assessing student perceptions, satisfaction, device usage, challenges, and other course-related variables. Prior to analysis, the internal consistency of the survey instrument was assessed using Cronbach's alpha, which demonstrated acceptable reliability across major sections ($\alpha \geq 0.70$), confirming the coherence of the item scales.

The data were analyzed using IBM SPSS Version 23. As the variables were primarily ordinal and the sample size was relatively small, the one-sample Wilcoxon Signed-Rank Test was employed to examine whether the median responses differed significantly from a hypothesized neutral value (typically 3 on a 5-point Likert scale). This non-parametric test was chosen due to its robustness in handling non-normal data distributions.

To complement significance testing, Rosenthal's r was calculated to determine the effect size for each comparison. Effect sizes were interpreted

according to Cohen's standard guidelines (1988): Small effect: $r \geq 0.10$, Medium effect: $r \geq 0.30$, Large effect: $r \geq 0.50$. These values provided insights into the practical significance of the findings, allowing for a more meaningful interpretation of student perceptions and experiences beyond statistical significance.

Limitations of the Study

The study encountered several limitations. The small sample size, limited to higher diploma students, restricts the generalizability of the results, and the data should be interpreted with caution. Additionally, the sample may not represent all higher diploma and diploma students but only two-year period during which it was applicable. In this study, data were collected at a single point in time (cross-sectional design), and the researcher was unable to manipulate the variables. Due to the small sample size within the given time frame and the need to reliably determine normality, a non-parametric method was applied to get more robust results.

Results

Respondent Profile

The respondent's demographic characteristics are indicated in Table 1 below, and the valid respondents were 58. The majority of the respondents, 46 (79.31%), were female. In comparison, 12 (28.68%) were male, indicating that the female percentage is larger than three times the male percentage. This reflects the gender distribution among Tamil medium students who followed the Higher Diploma in Library and Information Sciences course at SLLA in 2024.

Table 1
Demographic Profile

Characteristics	Attribute	Frequency	Percentage
Gender	Female	46	79.31%
	Male	12	28.68%
	Total	**58**	**100**
Age	21 – 25	14	24.1%
	26 – 30	25	43.1%
	31 – 35	11	18%
	36 – 40	6	10.3%
	41>	2	3.4%
	Total	**58**	**100**
GCE (A/L) Subject Stream of the students	Arts	37	63.8%
	Commerce	14	24.1%
	Science	5	8.6%
	Mathematics	1	1.7%
	Other	1	1.7%
	Total	**58**	**100**
Employed candidates	Academic Library	10	17.2%
	Community Centre Library	1	1.7%
	National Library	1	1.7%
	Police Department	1	1.7%
	Public Library	5	8.6%
	School Library	2	3.4%
	School Lab Assistant	1	1.7%
	Special Library	2	3.4%
	Teacher	1	1.7%
	Newspaper Lib.	1	1.7%
	Total	**58**	**100%**

Table 1 also outlines the respondents' age distribution, ranging from 21 to 40 years. Moreover, 14 participants (24.1%) were within the 21–25 years age range, while 43.1% (25) were between the 26–30 years age range. Additionally, 11 18% of students were under 31 – 35 years, while 10.3% (6) were 36 – 40. Only 2 (3.4%) students were over 40 years old. Eligibility for the Diploma program at the SLLA is determined by the GCE (A/L) (General Certificate of Education (Advanced Level)) examination. The majority of the students, 37 (63.8%), were from the Arts stream, followed by 14 (24.1%)

from the Commerce stream. Other streams have fewer indications. Moreover, out of 58 candidates, it was found that only 25 (43.1%) students were employed in various positions, while 33 (56.9%) students were not employed. Typically, the Tamil medium course is conducted only face-to-face; therefore, no distance course is available.

Table 2 depicts the geographic distribution of the Tamil-medium survey participants.

Table 2

Geographic distribution of Tamil-medium students

District	Amount
Jaffna	18
Mannar	1
Vavuniya	5
Trincomalee	3
Puttalam	2
Batticaloa	15
Ampara	7
Colombo	1
Kandy	3
Galle	2
Kalutara	1

The applicants are registered in various regions of the country, especially the Northern (18) and Northern Eastern (15) regions. For this Higher Diploma course, candidates were registered from 11 districts across the country.

Students' Success in Online Learning Methods

The LIS Diploma course for Tamil medium students was delivered in various centres across the country, including Jaffna, Batticaloa, and Colombo, with delivery modes ranging from face-to-face to online learning,

even during conventional teaching practices. The primary objective of this study was to assess the extent to which students successfully utilized online learning methods. A five-point Likert scale was employed to evaluate the level of success. The analysis revealed that the majority of students selected 'Strongly Agree' and 'Agree' in favour of online learning. Table 3 shows the levels of success associated with the online delivery mode.

According to Table 3, the responses of ‘Strongly Agree’ and ‘Agree’ indicated that nearly 70% of students preferred Zoom classes, with 89.7% believing it was convenient to participate from home. The analysis depicted that students expressed concerns about personal security (79.3%) and transportation (75.9%). Additionally, students found online classes effective for problem discussions (74.1%) and lecture presentations (70.7%). This preference may be due to the perception that online classes do not require additional expenses, such as room booking and physical interaction. Furthermore, most students had only one year of experience with online learning. Alternatively, the results further indicate that students are proficient in handling online platforms, with very few falling into the category of not responding.

A one-sample Wilcoxon Signed-Rank test (Table 3) was used, with a hypothesized median of 3 (representing a neutral response). The medians for statements 2, 3, 4, 5, and 6 in Table 2 were significantly different from the hypothesized median with p- values 0.000, 0.000, 0.006, 0.010, and 0.005 respectively, with medium effect size (r=-051) and very low effect size (r= -0.47, -0.36, -0.33 and -0.37). This indicates that most respondents significantly learned towards the ‘Agree’ side. This confirms that students were concerned about the clarity of lectures, the opportunity for problem discussion, the mode of delivery, their health and security, and

transportation. Despite these concerns, they successfully adapted to the Zoom delivery mode. However, no significant differences were found for statement 1 in Table 3.

Table 3
Success of participating in online classes

The success of the participation in Online Classes	Strongly Agree	Agree	Neutral	Not Agree	Strongly Not Agree	*P* value	*R*-value
All students can learn through a centralized Zoom class	26 (44.8%)	14 (24.1%)	10 (17.2%)	4 (6.9%)	4 (6.9%)	0.774 NS	NS
The lecture and the presentation are clear	12 (20.7%)	29 (50.0%)	9 (15.5%)	4 (6.9%)	4 (6.9%)	0.000 S	-0.516
Can discuss the problems with the lecturer	17 (29.3%)	26 (44.8%)	11 (19.0%)	2 (3.4%)	2 (3.4%)	0.000 S	-0.470
Ability to take part from home	27 (46.6%)	25 (43.1%)	4 (6.9%)	1 (1.7%)	1 (1.7%)	0.006 S	-0.361
Totally secure than Face-to-Face mode	21 (36.2%)	25 (43.1%)	1 (1.1%)	3 (5.2%)	9 (15.5%)	0.010 S	-0.337
No expenses for transport and food, etc	21 (36.2%)	23 (39.7%)	10 (17.2%)	4 (6.9%)	0 (0.0%)	0.005 S	-0.370

NS= Not Significant S=Significant

The Level of Satisfaction with having Online Education

Next, the satisfaction levels of online classes were measured to understand the global changes and their impact on Tamil medium diploma students within the Sri Lankan education system. A Likert scale was used to analyze the satisfaction level, and the results are presented in Table 4.

Table 4
The satisfaction level with online teaching

Tamil Medium students' Satisfaction level of Online Teaching	Frequency	%
Highly Satisfied	27	46.6
Satisfied	3	3.4
Neutral	2	3.4
Not Satisfied	14	24.1
Highly Not Satisfied	12	20.7
Total	58	**100**

Table 4 presents the study results on the satisfaction levels of Tamil-medium students with online teaching. The data indicate that nearly 50% of Tamil medium students are either highly satisfied or satisfied with online teaching. However, 44.8% of students held a negative view, indicating that they were either unsatisfied or highly unsatisfied. Notably, all students in the study had less than 1-2 years of experience with online learning, suggesting that while some students are satisfied with this mode of education, others remain dissatisfied.

Learning devices used by Tamil Medium students

The study also sought to identify the devices students used for online learning in the Higher Diploma courses (Table 5).

Table 5
Course learning devices used by the Tamil Medium students

Devices used by students for online learning	Frequency	%
Smart Phones	48	82.9
Laptops	9	15.5
Desktops	0	0
Tabs	1	1.7
Total	58	**100**

Data collected via the questionnaire revealed that the majority of Tamil-medium students owned smartphones, while ownership of laptops, desktops, and tablets was inadequate. Specifically, 48 (83%) reported owning a smartphone, while only 17.2% used laptops or Tablets. Interestingly, no Tamil-medium students reported using a desktop computer for online learning in the HDIPLIS course.

Moreover, it was intended to identify alternative methods for how the students followed the lectures when they could not access the above-mentioned devices. The analysis of the answer is shown in Table 6. The analysis revealed that most students who could not attend classes or lacked the required devices relied on notes shared by their peers who attended online classes. This group comprised 30 students (51.7%). Most of these notes were uploaded to the SLLA webpage, while others were distributed through WhatsApp groups organized by students for each academic year of the HDIPLIS course. Additionally, 16 students (27.6%) sought to obtain recordings of lessons from peers who participated in online classes. A smaller group of students, 10 (17.2%), consulted friends directly to get the particular lessons. These findings indicate that students actively seek

alternative methods to access educational content within the online education system.

Table 6
Alternative methods used to follow lesions

Method of following lesions without devices	Frequency	%
Getting notes	30	51.7
Ask friends	10	17.2
Exchanging recordings	16	27.6
Other	2	3.4
Total	**58**	**100**

Assessment of various aspects of the online course (course duration, assignment method, and role of online teaching staff)

The author attempts to identify different aspects of the online course by evaluating its course duration, assessment methods, and potential for further development. This evaluation aims to ensure the future direction and improvement of the online course, as outlined in the third objective of the study. First, the course duration was analyzed, as shown in Table 7.

Duration of the Course

The SLLA program, encompassing the Higher Diploma I & II, is designed to be completed within a maximum duration of five years (SLLA Bylaws, 2020/2021). Any student enrolled in the diploma course must fulfil the program requirements within this timeframe following their registration. Recently, amendments to the course rules and regulations have adjusted the overall completion timeline. Previously set at ten years, the maximum duration for the full course has been reduced to seven years. The program is now structured as a three-tier Diploma/Higher Diploma programme. The first tier is the Diploma in Library and Information Science (DLIS). The second

and third tiers together constitute the Higher Diploma in Library and Information Science (HDIPLIS). Each tier is designed to be completed within one year. However, students are required to complete the DLIS within a maximum period of three (03) years from the date of their first registration, while the higher diploma must be completed within a maximum of five (5) years. As a result, the entire program can now be completed within eight (8) years.

To assess students' opinions on these recent amendments, the following question was posed to them to know their views on this latest amendment.

Table 7
The course duration of the Diploma and Higher Diploma

Course Duration	10 year for full course	08 years for full course	3 year for Diploma	5 year for Higher Diploma
Diploma and Higher Diploma	8 (13.8%)	13 (22.4%)	15 (25.9%)	22 (37.9%)

Students generally agree with the adjusted duration for completing the Diploma and Higher Diploma courses (Table 7). Over half of the students surveyed expressed support for the revised timeframes, with 15 (26%) students agreeing to complete the course Diploma within three (3) years and 22 (38%) students in favour of completing the Higher Diploma within five (05) years.

Assignment-based education

In line with the recent amendments to the course regulations, assignments have been introduced as a formal assessment tool. The students' assessments were collected regarding the introduction of assignments for each teaching module, as indicated in Table 8.

Table 8
Assessment of Assignment based Education

Options	Easy from Assignment	Assignment is time-wasting	Gain further knowledge	It is hard work	Difficult to find information
Assess through assignments	30 (51.7%)	2 (3.4%)	23 (38.7%)	0	3 (5.2%)

According to Table 8, 30 (52%) students are open to having an assignment-based assessment in the SLLA three-tier Diploma/Higher Diploma programme. Among them, 23 (39%) students indicated that this assessment method provides an opportunity to gain additional knowledge.

Role of Teaching Staff

The question was paused to learn about the SLLA teaching staff, their teaching level, the content, self-development, and the adequacy of the teaching panel. The results of this analysis are presented in Table 9.

Table 9
Student assessment of lecturers' panel

Good at teaching	Completion of the Content	Can develop by themselves	Adequate Teaching panel
25 (43.1%)	17 (29.3%)	6 (10.3%)	10 (17.2%)

Table 9 reveals that 43% of Tamil-medium students enrolled in the three-tier Diploma program rated the teaching methods as satisfactory. Additionally, 29.3% of these students indicated that the syllabus content is comprehensive and supports their future academic and professional development.

The teaching pattern and the staff involvement of the SLLA

The fourth objective of the study was to measure the teaching pattern employed by lecturers for Tamil-medium students. The findings outlined in Table 10 provide insights into the effectiveness of these teaching methods and the level of involvement of the office staff in supporting the educational process.

Table 10
The teaching pattern of lecturers

Highly satisfied	Satisfied	Neutral	Not satisfied	Highly not satisfied
22 (37.9%)	32 (55.2 %)	2 (3.4%)	4 (3.4%)	0

Table 10 indicates students' satisfaction levels with the teaching patterns employed by the teachers involved in the program. More than half of the students, 32 (55.2%), were satisfied with the teaching methods, while 22 (38%) students expressed high satisfaction. Overall, 54 students (93.1%) expressed satisfaction with the teaching methods.

Office staff involvement

Three staff members are responsible for managing the operations of the three-tier education programme at the SLLA. Their responsibilities include maintaining communication with students to facilitate educational activities at each registration level, handling documentation, addressing

inquiries, processing payments, preparing educational materials for delivery, and collecting assignments. However, the staff members are primarily proficient in Sinhala communication with Tamil-medium students, which presents a challenge. To address this, students were asked whether they felt comfortable communicating with office staff to fulfil their requirements. The results of the inquiry are presented in Table 11.

Table 11
Office Staff support for education matters

Provide needy information	Friendly in communication	The responses are explanatory	Not helping	Cannot understand
31 (53.4%)	19 (32%)	2 (3.4%)	3 (12.1%)	3 (12.1%)

The analysis revealed a positive answer to the question. Although the staff speaks Sinhala, their communication was deemed understandable and perceived as capable of providing necessary information. A total of 31 (53.4%) reported that the staff effectively addressed their queries, while 19 (32%) students highlighted the friendly nature of their communication.

Challenges hinder effective online education

Presently, the popularity and speedy conversion of online education continue to rise, and a wide variety of online learning courses is available in the country. Although the popularisation of online education provides convenience for students and lecturers, numerous challenges and difficulties are associated with it.

This study identified the challenges diploma students face in online learning. These findings are summarized in Table 12. As indicated in Table 12, the majority of students selected either ‘Strongly Agree’ or ‘Agree’ positions for difficulties encountered during online education. The most

frequently reported challenges in online education were ‘not clearly hearing the lecture’ (43- 74.2%) and ‘not easy to participate' (41 - 63%). Additionally, 38 (63%) students reported ‘poor internet connection’, ‘more expensive IT equipment (laptops, computers, etc.)’ (36 – 52.1%), and 'signal problem' (31 – 51%).

Table 12
Challenges Faced by Online Class Students

Problems related to participating in Zoom Classes	Strongly Agree	Agree	Neutral	Not Agree	Strongly Not Agree	*P* value	*R*-value
1. Poor Internet Connection	20 (32.0%)	18 (31.0%)	9 (15.5%)	8 (13.8%)	5 (6.6%)	0.035 S	-0.151
2. Cannot log on promptly	20 (32.0%)	7 (12.1%)	14 (24.1%)	4 (6.9%)	7 (12.2%)	0.047 S	-0.142
3. Did not hear the Lecture clearly	24 (41.4%)	19 (32.8%)	6 (10.3%)	7 (12.1%)	2 (3.4%)	0.037 S	-0.149
4. No smart mobile phone	8 (11.3%)	21 (36.2%)	13 (22.4%)	7 (12.14%)	6 (10.3%)	0.229 NS	-0.086
5. Not as easy as participating in F-2-F Classes	20 (34.5%)	21 (36.2%)	5 (8.6%)	7 (12.1%)	5 (8.6%)	0.033 S	-0.152
6. Feeling alone (Isolation)	13 (20.0%)	16 (27.6%)	18 (31.0%)	5 (8.6%)	8 (13.8%)	0.504 NS	- 48.031
7. Have to go to another place for signals	19 (30.3%)	12 (20.7%)	15 (25.9%)	10 (17.2%)	4 (6.9%)	0.009 S	-0.188
8. Difficult to learn practical subjects	17 (26.9%)	12 (20.7%)	14 (24.1%)	7 (12.1%)	10 (17.2%)	0.260 NS	-0.080
9. More expensive IT equipment	21 (36.2%)	15 (25.9%)	13 (22.4%)	7 (12.1%)	4 (6.9%)	0.900 NS	-0.009
10. No attention to the lecture	3 (5.2%)	12 (20.7%)	14 (24.1%)	2 (3.4%)	3 (5.2%)	0.000 S	-0.279

A one-sample Wilcoxon Signed-Rank test was conducted (Table 12), using 3 (the value assigned for neutral) as the hypothesized median. The median of the statements of 1 - 10 in Table 12 was significantly different from (p = 0.000 - 0.900). Among that, a very low effect size (*r* = -0.15, -0.14, -0.14, -0.08, -0.15, -0.18, -0.08, -0.00, -0.27) is indicated in items 1-5 and 7-

10 of Table 12. A low effect size (r = -0.15, -0.14, -0.14, -0.08, -0.15, -0.18, -0.80, -0.00 and -0.27) indicate in the items of 1, 2, 3, 4, 5, 7, 8, 9, and 10th of Table 12. A large effect size (r = -48.0) is indicated in item 6 of Table 12. As such, all the responses are significantly moved towards the strongly agree and agree sides.

Discussion

This study examined how online education affects SLLA students' readiness in multiple dimensions, including device ownership, satisfaction levels, and perceived ease of participation in online classes while identifying key challenges in adopting online learning.

The findings indicated that a significant proportion of students preferred Zoom-based classes, with 89.7% citing the convenience of attending from home. Additionally, 79.3% of students expressed concerns regarding personal safety and transportation issues (75.9%), both of which may contribute to the appeal of online learning. These findings align with earlier studies by Nafrees et al. (2020), Gismalla et al. (2021), and Ashby (2011), which noted that students preferred online learning due to its convenience, continued access to course content, and safety during the pandemic. Similarly, Hogdal et al. (2021) emphasized that students are more comfortable with online formats due to their familiarity with digital tools. Ratten (2023) further highlighted the growing interest in hybrid learning models that integrate in-person and online components. However, in contrast, Fernando and Bandara (2021) argued that online learning is less effective than face-to-face instruction. Selvaras (2020) noted that only 21% of LLB students at the Open University of Sri Lanka had prior experience with fully online learning. A majority of students perceived online classes to

be effective for engaging in problem-solving discussions (74.1%) and for delivering lecture content (70.7%). These preferences may be linked to the perception that online learning reduces additional costs, such as room rentals and commuting expenses. It is also worth noting that most participants had limited experience, approximately one year, with online education. However, the results indicate a strong level of digital proficiency among students, as non-responses were minimal.

The study also measured student satisfaction with online learning and found that nearly 50% of Tamil-medium students were satisfied with online teaching despite having less than one year of experience, whereas 44.8% of students expressed dissatisfaction. This reflects a gap between the perceived utility of online learning and the actual learning experience, suggesting that positive features, such as convenience, may not necessarily translate to meaningful academic engagement. Hayashi et al. (2020) found similar patterns, with 66% of students in state institutions and 59% in non-state institutions reporting moderate satisfaction. In contrast, Nafreez et al. (2020) reported 50% satisfaction at the South Eastern University, with 19.6% of students still preferring offline learning. However, in the present study, 44.8% of students reported being dissatisfied with online learning. Nevertheless, blended learning, which combines online and in-person education, was the second most preferred mode, reinforcing the need for a hybrid approach in the pandemic situation. Therefore, the sudden shift to online learning led to both positive and negative outcomes, as students were inexperienced with this mode of education.

Device usage is another critical aspect of student readiness. The study revealed that 82.9% of students used smartphones, while only 17.2% used

laptops and tablets. The results are consistent with those of Hayashi et al. (2020), who found laptops to be the primary devices, followed by smartphones, tablets, and desktop computers. However, the dominance of smartphones as a primary device raises concerns, as they are less suitable for typing assignments, accessing large documents, or participating in interactive sessions. Arachchige et al. (2021) also noted that limited device functionality can hinder learning quality, especially when students are required to use Learning Management Systems (LMS) for assessments or reading. This suggests a strong level of commitment and adaptability among students, indicating a positive attitude toward adopting new technologies in education and a determination to complete the course without delay.

A level of satisfaction with the teaching patterns of the teachers involved in the program was measured, and the study found that 93.1% of students were either satisfied or highly satisfied with the teaching approaches adopted by lecturers. This aligns with Aristovnik (2020), who noted that 57.6% of students were satisfied with the support provided during the shift to online education. Hayashi et al. (2020) also noted that over 80% of students indicated that the lecturers are good and very good at delivering online education. However, the current study highlights that communication and student feedback systems were often lacking despite this general satisfaction with teaching.

In terms of administrative support, 53.4% of students indicated that office staff provided the necessary information, while 32% described the staff as friendly in their communication. However, a notable concern emerged regarding language accessibility. As most administrative personnel primarily communicate in Sinhala, Tamil-medium students often encounter language barriers that hinder their ability to address academic concerns

effectively. Although this issue was not quantitatively assessed in the present study, it was highlighted through qualitative responses and warrants further investigation in future research.

The study also explored the use of alternative learning strategies adopted by students in response to challenges in accessing live lectures, often due to technical or logistical limitations. A significant proportion of students (51.7%) reported utilizing shared notes, 27.6% accessed recorded lectures, and 17.2% sought assistance from peers. These informal learning networks underscore students' resilience and proactive engagement in navigating educational barriers. Nonetheless, the reliance on such strategies also points to systemic shortcomings in providing consistent and equitable access to instructional content across the student body.

Assessment methods emerged as another key area of focus. Although recently integrated into the education program, assignment-based evaluation was preferred by a majority of students (52%), with 38.7% acknowledging that assignments contributed to their more profound understanding of course content. These results are consistent with the broader shift toward continuous assessment practices in online education. However, they also emphasize the need for providing targeted support in academic writing and research skills, particularly in light of ongoing challenges related to language proficiency and digital literacy.

Preferences regarding course duration also reflected alignment with recent policy reforms. A notable proportion of students (38%) favoured completing the Higher Diploma within a five-year period, while 26% supported a three-year duration for the Diploma. These perspectives align with the revised regulations introduced by the SLLA, indicating that the

restructured program framework is broadly consistent with student expectations.

The study identified several key barriers to effective online learning. The most commonly reported challenges included difficulty hearing lectures (74.2%), poor internet connectivity (63.0%), high costs associated with acquiring necessary equipment (52.1%), and limited access to stable internet signals (51.0%). Although the survey addressed the issue of isolation, responses were statistically insignificant, potentially due to cultural or contextual factors such as strong familial support systems or established peer networks. While student interaction in the online learning environment was reported at a moderate level (47.6%), the potential for social isolation remains a concern, particularly in prolonged online education contexts. This underscores the need for longitudinal research on the psychosocial impacts of online learning. Furthermore, studies conducted in 2020 and 2021 similarly highlighted persistent technical and delivery-related challenges in the online education landscape.

The findings of this study are consistent with broader observations made by UNESCO (2020b), Madhubhashini (2021), and O'Hagan (2020), who noted that online learning in developing countries is significantly impeded by inadequate infrastructure, insufficient teacher training, and limited student access to ICT resources. Similar challenges have been documented in Sri Lankan contexts by Fernando and Bandara (2021), Hettiarachchi et al. (2021), and Yan et al. (2021), all of whom underscore the disparities in access to digital tools and reliable connectivity.

This study contributes to the expanding body of literature on online education in developing contexts by drawing attention to the specific

experiences of Tamil-medium students in Library and Information Science (LIS) programs, an underrepresented demographic in national educational discourse. While the adoption of platforms such as Zoom and Google Meet reflects a degree of technological advancement, the effective utilization of these tools requires more than just basic access. Successful integration requires pedagogical approaches that are sensitive to linguistic diversity, enhanced digital literacy training, and responsive feedback mechanisms that cater to the varied needs of all learners.

This study further underscores the importance of differentiating between readiness, encompassing technical capacity, infrastructure, and attitudinal preparedness, and satisfaction, which reflects students' subjective evaluations of their online learning experiences. While the findings indicate a generally positive attitude toward online participation, indicators of readiness reveal that systemic challenges continue to impede equitable engagement.

In line with the Technology Acceptance Model (TAM), the study confirms that students' acceptance of online learning platforms is influenced by perceived ease of use and perceived usefulness. However, as TAM also emphasizes, external variables, such as social influence and the availability of supportive conditions, significantly influence behavioural-emphasizes intention and actual usage. These are critical areas in which the SLLA must enhance its efforts to ensure more inclusive and effective online learning environments.

This study is not without limitations. The relatively small sample size and cross-sectional nature of the research limit the extent to which the findings can be generalized. Additionally, the lack of objective academic

performance measures hinders the ability to make definitive conclusions about learning outcomes. To gain a more comprehensive understanding of online education within Sri Lanka's LIS sector, future research should incorporate longitudinal studies, larger and more diverse samples across all three language mediums, and performance-based metrics.

Recommendations

The study recommends addressing key areas identified in the research to enhance student engagement in e-learning. Additionally, it needs to be made to foster more interaction between Tamil-medium lecturers and students while addressing dissatisfaction with online learning. Implementing lecturer evaluations or feedback mechanisms will create a forum to address and minimize issues within the lecturer panel. Findings indicate that significant barriers exist in online learning regardless of the teaching mode. A thorough assessment of the challenges faced by Tamil–medium students is essential to develop effective online learning techniques. Refreshing the mindset of Tamil-medium students and lecturers and redesigning online lectures using a constructive alignment approach can improve practical effectiveness. The study recommended that addressing the key areas identified will help engage more students in e-learning. Maintaining increased interaction between Tamil-medium lecturers and students and addressing students' dissatisfaction with online learning is necessary. Lecturers' evaluations or feedback can help identify and minimize the negative aspects of the lecturer panel. The study highlights that online learning presents various challenges, making a thorough assessment of the difficulties faced by Tamil-medium students essential.

Refreshing the mindset of Tamil-medium students and lecturers and redesigning online lectures using constructive alignment and technology will enhance engagement. It is essential to reimagine more effective online education by utilizing technology and exploring innovative ways to make online learning more equitable and beneficial. By addressing these challenges and fostering an inclusive learning environment, online education can become more effective and beneficial for Tamil-medium students.

Future implications

This study provides practical suggestions for lecturers and course organizers on online education modes, highlighting key areas for future research. This is important because then the delivery of education has changed and progressed due to the COVID-19 pandemic. Many adjustments have been made in response to the COVID-19 pandemic, including the transition to virtual classrooms and online teaching. These trends may persist due to the emphasis on online technology, and there has been a fundamental shift in the way students learn, and educators teach. The study suggested conducting longitudinal research to enhance the understanding of correlations and interrelationships among different levels of diploma and higher-order students, as well as lecturers of SLLA.

To ensure that online learning is equitable, beneficial, effective, and efficient in the library and information science discipline, LIS professionals must redesign and reimagine their online education and course content, teaching tools, and materials by integrating technology to maximize the utilization of e-learning. Repeating the result with a more heterogeneous sample, including all stakeholders involved in online teaching, would help to measure the effectiveness, usefulness, and adoption of online teaching in the field of LIS.

References

Arachchige, U. S. P. R., Sathsara, K. L. T., Preethika, P., Miyurangi, K. A. V., Harshana, R. K. M. D. S., Siriwardena, M. B. D. K., Ranaraja, C. D. M. O., Dissanayake, D. K., & Jayathilake, S. A. P. U. M. (2021). Immediate actions to minimize the impact of COVID-19 on education. *International Journal of Multidisciplinary Research and Publications (IJMRAP), 4*(2), 25–34.

Aristovnik, A., Keržič, D., Ravšelj, D., Tomaževič, N., & Umek, L. (2020). A global student survey: Impacts of the COVID-19 pandemic on life of higher education students. *COVID-19 Social Science Lab*. http://www.covidsoclab.org/global-student-survey/global-database/

Ashby, J., Sadera, W. A., & McNary, S. W. (n.d.). Comparing student success between developmental math courses offered online, blended, and face-to-face. *Journal of Interactive Online Learning, 10*(3).

Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies, 2*(2), 113–115. https://doi.org/10.1002/hbe2.191

Borgohain, D., Nath, R., & Devi, P. (2020). Adoption of E-learning in Library and Information Science (LIS) education in North-East India: A proposal. *Library Philosophy and Practice (e-journal)*, 4257. https://digitalcommons.unl.edu/libphilprac/4257

Butz, N. T., Stupnisky, R. H., & Pekrun, R. (2015). Students' emotions for achievement and technology use in synchronous hybrid graduate programmes: A control-value approach. *Research in Learning Technology, 23*. https://doi.org/10.3402/rlt.v23.26097

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Cui, Y., Ma, Z., Wang, L., Yang, A., Liu, Q., Kong, S., & Wang, H. (2023). A survey on big data-enabled innovative online education system during the COVID-19 pandemic. *Journal of Innovation & Knowledge, 8*(1), 1–18.

Fernando, W. C. D. K., & Bandara, R. M. P. S. (2021). Perception of students in adapting to online learning during COVID-19. *SLAIHEE Higher Education Conference*. http://www.slaihee.org

Gismalla, M. D. A., Mohamed, M. S., Ibrahim, O. S. O., Elhassan, M. M., & Mohamed, M. N. E. (2021). Medical students' perception towards E-learning during COVID-19 pandemic in a high burden developing country. *BMC Medical Education, 21*, 377. https://doi.org/10.1186/s12909-021-02811-8

Hayashi, R., Garcia, M., Maddawin, A., & Hewagamage, K. P. (2020). *Online learning in Sri Lanka's higher education institutions during the COVID-19 pandemic*. Asian Development Bank. https://www.adb.org/publications/online-learning-sri-lanka-covid-19-pandemic

Hettiarachchi, S., Damayanthi, B., Heenkenda, S., Dissanayake, D., Ranagalage, M., & Ananda, L. (2021). Student satisfaction with online learning during the COVID-19 pandemic: A study at state universities in Sri Lanka. *Sustainability, 13*(21), 11749. https://doi.org/10.3390/su132111749

Hogdal, C., Rasche, A., Schoeneborn, D., & Scotti, L. (2021). Exploring student perceptions of the hidden curriculum in responsible management education. *Journal of Business Ethics, 168*(1), 173–193.

Ishwar, S. D. (2019). E-learning: Tools and techniques in LIS education. *Journal of Advancements in Library Sciences, 6*(1), 450–459.

Jameel, A. S. (2018, January 3–4). *Challenges facing students toward ICT library adoption* [Paper presentation]. *International Conference on Accounting, Business, Economics and Politics (ICABEP)*, Kilis, Turkey. https://doi.org/10.23918/icabep2018p23

Jameel, A. S., & Ahmad, A. R. (2020). The mediating role of job satisfaction between leadership. *International Journal of Psychosocial Rehabilitation*, *24*(4), 2399–2414. https://doi.org/10.37200/ijpr/v24i4/pr201349

Kang, B. (2021). How the COVID-19 pandemic is reshaping education. In J. Lee & S. H. Han (Eds.), *The future of service post-COVID-19 pandemic: Vol. 1. The ICT and evolution of work* (pp. 15–36). Springer Nature. https://doi.org/10.1007/978-981-33-4126-5_1

Kuh, G. D., Kinzie, J. L., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2006). *What matters to student success: A review of the literature* (Vol. 8). National Postsecondary Education Cooperative.

Kumbhar, R. (2009). Use of e-learning in library and information science education. *DESIDOC Journal of Library & Information Technology, 29*(1), 37–41. https://doi.org/10.14429/djlit.29.228

Lankage, J. (1989). Library education in Sri Lanka. *International Library Review*, *21*(1), 67–72. https://doi.org/10.1016/0020-7837(89)90032-0

Lee, J., & Han, S. P. (2021). Preparing for accelerated third-order impacts of digital technology in post-pandemic service industry. In J. Lee & S. H. Han (Eds.), *The future of service post-COVID-19 pandemic: Vol. 1. The ICT and evolution of work* (pp. 1–14). Springer Nature. https://doi.org/10.1007/978-981-33-4126-5_1

Madhubhashini, G. T. (2021). *Challenges and opportunities of e-learning via Zoom*. In *Proceedings of the 34th Annual Conference of the Asian Association of Open Universities* (Vol. II, pp. 375–382). Asian Association of Open Universities.

Nafrees, A. C. M., Roshan, A. M. F., Baanu, A. S. N., Nihma, M. N. F., & Shibly, F. H. A. (2020). Awareness of online learning of undergraduates during COVID-19 with special reference to South Eastern University of Sri Lanka. *Journal of Physics: Conference Series, 1712*(1), Article 012010. https://doi.org/10.1088/1742-6596/1712/1/012010

O'Hagan, C. (2020). Startling digital divides in distance learning emerge. *UNESCO*. https://en.unesco.org/news/startling-digital-divides-distance-learning-emerge

Rachzeeth, M., Kariapper, R., Pirapuraj, P., Nafrees, A., Rishan, U. M., & Ali, S. N. (2019, November). *E-learning at home vs traditional learning among higher education students: A survey-based analysis*. In *Proceedings of the 9th International Symposium* (pp. 213–217). South Eastern University of Sri Lanka. ISBN 978-955-627-189-8.

Ratten, V. (2023). The post-COVID-19 pandemic era: Changes in teaching and learning methods for management educators. *The International Journal of Management Education, 21*(1), 100777. https://doi.org/10.1016/j.ijme.2023.100777

Sahu, P. (2020). Closure of universities due to coronavirus disease 2019 (COVID-19): Impact on education and mental health of students and academic staff. *Cureus, 12*(4), e7541. https://doi.org/10.7759/cureus.7541

Samsudeen, S. N., & Mohamed, R. (2019). University students' intention to use e-learning systems: A study of higher educational institutions in Sri Lanka. *Interactive Technology and Smart Education, 16*(3), 219–238.

Selvaras, J. (2020). Technology usage for teaching and learning law in open and distance learning: A Sri Lankan perspective. *Asian Association of Open Universities Journal*, *15*(1), 60–74. https://doi.org/10.1108/AAOUJ-11-2019-0051

Sri Lanka Library Association. (2024). *Annual report & auditor's report 2024/2025*. Colombo.

Sun, L. T., Tang, Y. M., & Zuo, W. (2020). Coronavirus pushes education online. *Nature Materials, 19*(6), 687. https://doi.org/10.1038/s41563-020-0678-8

Tarkar, P. (2020). Impact of COVID-19 pandemic on education system. *International Journal of Advanced Science and Technology, 29*(9s), 3812–3814.

Toquero, C. M. (2020). Challenges and opportunities for higher education amid the COVID-19 pandemic: The Philippine context. *Pedagogical Research, 5*(4), 1–5. https://doi.org/10.29333/pr/7947

UNESCO. (2020a). *Distance learning solutions*. https://en.unesco.org/covid19/educationresponse/solutions

UNESCO. (2020b). *UNESCO rallies international organizations, civil society and private sector partners in a broad coalition to ensure #LearningNeverStops*. https://en.unesco.org/news/unesco-rallies-international-organizations-civil-society-and-private-sector-partners-broad.

Urme, U. N., & Barua, B. (2023). Assessing the online teaching readiness of faculty members. *Journal of Research in Innovative Teaching & Learning, 18*(1), 123–144. https://doi.org/10.1108/JRIT-10-2022-0070

Weerarathna, R. S., Rathnayake, N. M., Pathirana, U. P. G. Y., Weerasinghe, D. S. H., Biyanwila, D. S. P., Bogahage, S. D., & Thiwanka, M. P. S. (2023). Effect of e-learning on management undergraduates' academic success during COVID-19: A study at non-state universities in Sri Lanka. *Heliyon, 9*, e19293. https://doi.org/10.1016/j.heliyon.2023.e19293

Wood, G. (2022). The global market for management education. In M. R. Fellenz, S. Hoiden, & M. Brady (Eds.), *The future of management education* (pp. 13–27). Routledge.

Journal of the University Librarians Association of Sri Lanka, Vol. 28, Issue 2, July 2025, 89-117, DOI: https://doi.org/10.4038/jula.v28i2.8112

Job Satisfaction of Paraprofessional Staff Working in Academic Libraries in Sri Lanka: A Case Study at the Library, University of Jaffna

K.Murugathas[1] and S.Santharooban[2]

ABSTRACT

Paraprofessional staff in academic libraries play a vital role in providing efficient services to library readers. Their job satisfaction directly influences the quality of services offered by the library. This study explored the level of job satisfaction among the paraprofessional staff at the University of Jaffna Library and examined the main factors impacting their job satisfaction. Further, the study examined the influence of the selected demographic characteristics of the paraprofessional library staff members on their job satisfaction level. A survey research method was employed in this study. Self-administered pre-developed questionnaire served as the research tool for data collection. The total population of paraprofessional staff in this library was twenty-eight, all of whom were considered for the study. The collected data was analyzed using descriptive statistics and inferential statistics such as the Wilcoxon Signed Rank test, Kruskal-Wallis H test, and Mann-Whitney U.

[1]Deputy Librarian, Medical Library, University of Jaffna.
Email: komathym@univ.jfn.ac.lk , https://orcid.org/0000-0002-7252-0342

[2] Deputy Librarian, Faculty of Health-Care Sciences, Eastern University, Sri Lanka.
Email: santharoobans@esn.ac.lk, https://orcid.org/0000-0003-1984-875X

Received: 02 January 2025, Accepted revised version: 30 May 2025.

The survey evaluated various aspects of job satisfaction and how these different facets affect overall job satisfaction. Findings revealed that the study participants were moderately satisfied ($\bar{x}$ = 3.12) with their current job. The facet 'Nature of the Work' received the highest satisfaction level, with a mean value of 3.61 (SD = 0.79). This was followed by 'Supervision' ($\bar{x}$ = 3.50, SD = 0.48) and then 'Coworkers' ($\bar{x}$ = 3.38, SD = 0.77). The lowest-scored facet ($\bar{x}$= 2.64, SD = 0.50) was 'Operating Procedures in the Library'. The facets 'Rewards', 'Pay', 'Promotion' 'Opportunities', and 'Operating Procedures' scored below the neutral mean value (3.00), suggesting dissatisfaction and requiring attention. The study identified a significant difference in 'Pay', 'Benefits', and 'Rewards' among different experience levels of the participants ($p< 0.05$). The analysis further revealed that other demographic factors, such as gender, age, and educational and professional qualifications, do not influence any of the assessed nine facets of job satisfaction ($p>0.05$) of the paraprofessionals working at University of Jaffna Library. The findings of the study would be helpful to administrators in identifying areas of concern and implementing strategies to enhance the job satisfaction of paraprofessional staff.

***Keywords*:** Job satisfaction, Paraprofessional staff, University libraries, Sri Lanka, Academic libraries, Library Information Assistants

Introduction

Job satisfaction of employees is a crucial factor in the success of any organization. It is the level of satisfaction that the employee prefers the job. According to Locke (1976), job satisfaction can be implicit as a positive emotional response that arises from evaluating one's job or work experiences. Spector (1997) discussed that it is an individual's perception of a job. It depends on several factors, and it may change over time. The exact working situation can be expressed differently by different employees. Job satisfaction is an individual's attitudinal behaviour. Job satisfaction has a direct impact on an employee's health and well-being. Many people hold jobs primarily to earn a living and support their families. Armstrong (2006) described job satisfaction as being closely linked to the attitudes and feelings that individuals hold toward their work. Furthermore, he explained that if employees exhibited a positive attitude, they were said to be satisfied with their jobs. On the other hand, if they experienced an unfavourable attitude, they were unsatisfied with their job. The importance of job satisfaction goes beyond individual well-being; it directly impacts the efficiency and quality of any organization. Satisfied employees are more likely to be engaged, motivated, and committed to their work, which translates to better customer interactions, higher accuracy in task execution, and a positive workplace culture. The level of satisfaction has a positive impact on the job performance of support staff working in academic libraries (Ahamad et al., 2022). Conversely, dissatisfaction can lead to decreased productivity, higher turnover rates, and a decline in service quality, all of which can undermine the organization's mission of serving its academic community effectively (Pugno & Depedri, 2010). Addressing the job satisfaction of paraprofessional staff, therefore, is not just a human

resource concern but a strategic priority for academic libraries aiming to maintain excellence in their services (Rubin, 1991).

Effective services are vital for the success of an academic library, as they support learning, teaching, research, and overall academic excellence (Ariyo & Okwilagwe, 2020). The effectiveness of library services significantly impacts the quality of education and research. By providing equal access to resources, fostering information literacy, and adapting to changing academic needs, libraries play an essential role in the success of the academic community (Corrall & Jolly, 2019). It ensures that all members of the university community, regardless of background or abilities, can access a wide range of resources and services. All categories of staff members should cooperatively work hard to provide effective and efficient services in academic libraries. Paraprofessional staff named Library Information Assistants (LIAs) play a crucial role in the functioning of academic libraries in Sri Lanka. The category of staff members, who often hold intermediate level qualifications in the field of Library and Information Sciences, supports the core activities of libraries and helps to ensure the smooth operation of library services. They are mainly responsible for activities such as cataloguing, circulation, interlibrary loans, and assisting library readers, which form the backbone of daily library operations. By taking on routine responsibilities, paraprofessional staff members support the professional librarians to focus on more specialized tasks such as research support, information literacy, training, collection development, etc.

Understanding the factors that contribute to or detract from job satisfaction among paraprofessionals is crucial for fostering a supportive and productive workplace environment. Issues such as workload, workplace

relationships, opportunities for professional development, recognition, and compensation all influence how these employees perceive their roles and their organization (Brun & Dugas, 2008). Furthermore, the unique environment of academic libraries, characterized by evolving technologies, budget constraints, and shifting patron needs, adds another layer of complexity to job satisfaction for paraprofessionals.

University of Jaffna is one of the oldest state Universities in Sri Lanka established as a campus of the University of Sri Lanka in 1974. It became an individual university in 1978. Currently, it has fourteen faculties in a wide range of disciplines. Seven branch libraries are attached to the faculties in different locations, managed by the main library of this university. Three faculties are in Kilinochchi district, and all other faculties are in Jaffna district.

Many studies (Thirunavukarasu, 1994; Amarakoon, 1995; Kuruppu, 1998; Wijeweera, 2004) have been conducted on the job satisfaction of employees in university libraries in Sri Lanka, but the main concern of the research studies was on the job satisfaction of the professional staff members rather than paraprofessional staff members working in the university libraries. Studying job satisfaction among paraprofessional staff is important to address their concerns and enhance their work experience. By examining this topic, academic institutions can better understand how to support these vital employees, ultimately improving both individual well-being and the overall effectiveness of library services.

Objectives of the study

- To explore the level of satisfaction of the library paraprofessional staff working at the library, University of Jaffna.
- To identify the major job satisfaction factors that influence the job satisfaction level among paraprofessional staff members.
- To find out whether there are any correlations between the selected demographic characteristics of the paraprofessional library staff members and their job satisfaction level.

Literature Review

Spector (1985) developed a widely used job satisfaction survey tool to assess staff satisfaction in private or non-profit organizations. This validated tool has nine subscales: pay, promotion, supervision, fringe benefits, operating conditions, contingent rewards, co-workers, nature of the work, and communication. Overall job satisfaction can be measured using these nine subscales. Each subscale has four items, each of which includes a Likert rating scale, allowing comprehensive measurement of overall job satisfaction. Job satisfaction among library support staff was conducted in Alabama academic libraries by Fitch (1990). The study used a job description index as a survey tool to collect data. In this study, the employees working in small libraries (less than 3000 students) were more satisfied with the supervision than the employees working in large libraries (3000-9000 students). Compensation and opportunities for promotion were the least satisfying factors among the library support staff.

Thapisa (1992) reported on a study that identified library assistants' attitudes toward library work. The study found that library work did not

provide intellectual stimulation among library assistants employed in university libraries in the United Kingdom. Further, the study explored the idea that they worked in the library to earn money and that the job didn't play any important role in their lives. Parmer and East (1993) conducted a study on job satisfaction among support staff employed in Ohio academic libraries. The study concluded that overall satisfaction of the support staff of these libraries was rated as satisfied with their library job. Out of the nine subscales used in the research questionnaire, satisfaction was expressed in five subscales, and they were not satisfied with the rest of the four subscales, which were operational procedures, communication, rewards, and promotion. Further, the study pointed out that part-time employees were more satisfied with the pay than permanent employees working in the library. Murray (1999) performed a study among the employees, including paraprofessionals and professionals, at the Academic Affairs Library of the University of North Carolina at Chapel Hill to identify the job satisfaction level of these staff members. Both categories of these staff members were satisfied with their job and professional staff members were significantly more satisfied than paraprofessional staff. The study further identified that pay and promotion were the lowest satisfaction factors among these staff members.

Hussain and Soroya (2017) investigated factors affecting the job satisfaction of paraprofessional staff working in university libraries in Pakistan. The study revealed widespread dissatisfaction with salary and job security being the most influential factors in determining the level of satisfaction of paraprofessional staff members in academic libraries in Pakistan. Permanent employees reported greater satisfaction than contract-based staff more satisfied than contract-based staff. Further, the study pointed

out that there was no significant difference in the level of job satisfaction between the employees working in government and private libraries.

Opeke and others (2019) conducted a study among library staff members in public universities in South-West Nigeria. It was a survey research study based on Herzberg's two-factor theory. Data was collected from professional and paraprofessional staff working in university libraries in Nigeria. The study reported that the overall level of satisfaction of the staff members was high. The study highlighted that job security, relationships with co-workers, the nature of work, and recognition significantly contributed to overall job satisfaction. Out of all the job satisfaction factors, salary scored the lowest mean value, indicating library staff members were not satisfied with their salaries.

A study was conducted by Martin (2020) to study the job satisfaction of professional librarians and library staff working in different types of libraries in the USA. Seven hundred and seventy participants were included in the survey. It was reported that no significant correlation between job satisfaction and the years of library service, age of the staff members, race, or gender. Abdulrahman, Abubakar and Ahmed (2023) conducted a descriptive survey involving 250 paraprofessionals in six academic libraries in Bauchi State. The study reported gender-based differences in satisfaction. Male staff were more satisfied with the factor of staff development, while female staff were not satisfied with the same. However, both groups expressed satisfaction with promotional opportunities.

While numerous studies have explored job satisfaction among library staff globally, a key gap remains concerning paraprofessional staff in university libraries in Sri Lanka. There are a few studies carried out in Sri

Lanka to explore the job satisfaction of professional staff working in state university libraries in Sri Lanka (Thirunavukarasu, 1994; Amarakoon, 1995; Kuruppu, 1998; Wijeweera, 2004; Marasinghe and Wijayaratne, 2018). These studies were mainly focused on the job satisfaction of professional staff members. Moreover, there is a lack of recent studies that reflect current employment trends, job satisfaction, and professional development of paraprofessional staff in Sri Lanka.

A comprehensive study by Ranaweera et al. (2018), surveyed 510 library employees across fourteen Sri Lankan state universities, including both professional and paraprofessional staff attached to the academic libraries in Sri Lanka. The study concluded that overall, the library employees were moderately satisfied with their library work. Further, the research identified seven key factors affecting job satisfaction: work itself, supervision, salary, promotion opportunities, recognition, working conditions, and cooperation among staff. The study recommended enhancing career development opportunities and establishing mechanisms for appreciation and feedback to improve job satisfaction levels. Each of these studies provided different findings to understand the level of job satisfaction of paraprofessional staff members working in libraries.

The current study seeks to address gaps by focusing specifically on the job satisfaction of paraprofessional staff working in the Jaffna University Library in Sri Lanka, providing current perspectives of the library paraprofessionals. By examining the key factors such as salary, supervision, promotion opportunities, work environment, etc., the study builds upon the foundational work of prior researchers while offering new insights relevant to paraprofessional staff working in the Jaffna University library.

Research Design and Methods

The survey research method was used to explore job satisfaction among the library information assistants working at the University of Jaffna. A self-administered questionnaire was used as a research tool to collect data. The total population of this staff category was twenty-eight, and the entire population was considered for this study.

A pre-developed structured questionnaire (Spector, 1997) was employed to gather data from participants. The English version of the questionnaire was translated into Tamil by a professional translator to help the study participants easily understand it in their native language. The translated questionnaire was then back-translated into English to prevent translation errors. Experts evaluated the Tamil translation to assess its reliability. The validated job satisfaction survey encompasses nine facets of job satisfaction: 'Pay', 'Promotion', 'Supervision', 'Benefits', 'Contingent Rewards', 'Operating Procedures', 'Co-workers', 'Nature of the Work', and 'Communication'. Each facet contains four statements, mixing negative and positive statements. A total of 36 statements was included in the questionnaire, which measures overall employee satisfaction. A five-point Likert scale was employed, ranging from 'Strongly Agree', 'Strongly Disagree'. At the beginning of the questionnaire, demographic information about the participants was included. A cover letter was attached to the questionnaire, emphasizing the purpose of the study, the anonymity of data collection, data confidentiality, and the voluntary nature of participation in the research. Self-administered questionnaires were distributed among the participants, and data were collected in February 2025. The collected data was analyzed for descriptive statistics, and inferential statistics such as the Wilcoxon Signed

Rank test, Kruskal-Wallis H test, and Mann-Whitney U were also used to analyze the data. The statistical analysis was performed using R software (version 4.4.2) from the Comprehensive R Archive Network (CRAN).

Results and Discussion

Demographic information of the participants

The response rate of the study was 100 %. The survey provides details of the demographic characteristics and professional experiences of paraprofessional staff working at the library, University of Jaffna. Table 1 presents a detailed summary of the participants' demographic characteristics. The study participants were 43% male and 57% female, suggesting a slight female dominance in the profession. The largest age group among the participants was 36-45 years (43%), followed by 26-35 years (29%) and 46-55 years (21%). This indicates that a significant proportion of the participants are in their mid-career stage. Regarding professional experience, half of the participants had 15-20 years of service, while only 7% had more than 20 years of experience. Educational and professional qualifications are well-represented, and most employees have professional qualifications from the Sri Lanka Library Association (SLLA), which is the professional body providing Library Science courses in Sri Lanka. Though the basic requirement of the educational qualification of this job position in Sri Lanka is an advanced level, which refers to a high school qualification in Sri Lanka, 68% of the participants earned basic Degrees, Postgraduate Diplomas, and Master's Degrees. This suggests that most participants exceed the requirements of the minimum qualification.

Table 1

Demographic information of the participants

Characteristics		Frequency	Percentage
Library	Main	18	64.3
	Branch	10	35.7
Gender	Male	12	42.9
	Female	16	57.1
Age (years)	26-35	8	28.6
	36-45	12	42.9
	46-55	6	21.4
	> 55	2	7.1
Experience as Library Information Assistants (Years)	0-5	10	35.7
	5-10	2	7.1
	10-15	0	0.0
	15-20	14	50.0
	>20	2	7.1
Distance from the residents to the working library (km)	<3	6	21.4
	3-5	5	17.9
	5-10	3	10.7
	10-15	3	10.7
	15-20	3	10.7
	>20	8	28.6
Educational Qualification	A/L	9	32.1
	Degree	11	39.3
	PG Diploma	3	10.7
	Masters	5	17.9
Library Science Qualification	BA	0	0.0
	PGD	3	10.7
	SLLA I	9	32.1
	SLLA III	15	53.6
	Others	1	3.6

Participants were asked whether they had ever considered resigning from their jobs to identify their job satisfaction level. The responses indicated that 71% (n=20) had never thought of leaving the job, 21% (n=6) had seldom considered it, and 7% (n=2) reported frequently thinking about resignation. It shows that the majority of the staff members are satisfied with their current jobs. It is interesting to note that no one reported always thinking of leaving the job.

Survey results of job satisfaction score

The survey assessed nine facets of job satisfaction: 'Pay', 'Promotion', 'Supervision', 'Benefits', 'Contingent Rewards', 'Operating Procedures', 'Coworkers', 'Nature of Work', and 'Communication'. The survey tool consists of thirty-six (36) statements that cover the nine facets. There are seventeen positive (17) statements and nineteen (19) negative statements. Positive statements are coded as follows: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree. Negative statements are reverse-coded. A one-tail Wilcoxon signed-rank test (one-sample test) was performed, using 3 (Neutral) as the hypothetical median to determine whether the median scores of each statement significantly differed from the neutral value of 3. The results revealed that, among the seventeen positive statements, the medians of thirteen statements were significantly greater than 3 ($p<0.0.5$). These statements indicate generally positive perceptions. Among nineteen negative statements, the medians of nine statements were significantly less than 3 ($p<0.0.5$) and these statements indicate generally negative perceptions.

Table 2

The median values of the statements grouped with the relevant facets

Facets	Item	Direction	Statements	Median
Pay	1	+	I feel I am being paid a fair amount for the work I do	4.00**
	10	-	Raises are too few and far between	2.00*
	19	-	I feel unappreciated by the organization when I think about what they pay me	2.00
	28	+	I feel satisfied with my chances for salary increase	3.50
Promotion	2	-	There is really too little chance for promotion on my job	2.00*
	11	+	Those who do well on the job stand a fair chance of being promoted	3.50
	20	+	People get ahead as fast here as they do in other places	3.50
	33	+	I am satisfied with my chances for promotion	4.00**

Supervision	3	+	My supervisor is quite competent in doing his/her job	4.00**
	12	-	My supervisor is unfair to me.	2.00*
	21	-	My supervisor shows too little interest in the feelings of subordinates.	4.00**
	30	+	I like my supervisor	4.00**
Benefits	4	-	I am not satisfied with the benefits I receive	3.00
	13	+	The benefits we receive are as good as most other organization offer.	4.00**
	22	+	The benefit package we have is equitable.	3.50
	29	-	There are benefits we do not have which we should have	2.00
Contingent Rewards	5	+	When I do a good job, I receive the recognition for it that I should receive	4.00**
	14	-	I do not feel that the work I do is appreciated	2.50*
	23	-	There are few rewards for those who work here.	2.00
	32	-	I don't feel my efforts are rewarded the way they should be.	2.00*
Operating Procedures	6	-	Many of our rules and procedures make doing a good job difficult	4.00
	15	+	My efforts to do a good job are seldom blocked by red tape.	4.00**
	24	-	I have too much to do at work	2.00*
	31	-	I feel my skills are enough to work efficiently & effectively	1.00*
Coworkers	7	+	I like the people I work with	4.06**
	16	-	I find I have to work harder at my job than I should because of the incompetence of people I work with.	4.00
	25	+	I enjoy my co-workers	4.00**
	34	-	There is too much bickering and fighting at work.	2.00*
Nature of Work	8	-	I sometimes feel my job is meaningless	3.00
	17	+	I like doing the things I do at work.	4.00**
	27	+	I feel a sense of pride in doing my job	4.00**
	35	+	My job is enjoyable	4.00**
Communication	9	+	Communication seems good within this organization	4.00**
	18	-	The goals of this organization are not clear to me	4.00
	26	-	I often feel that I do not know what is going on with the organization	2.00*
	36	-	Work assignments are often not fully explained.	4.00

*Note: Positive statements are coded as follows: 1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree. Negative statements are reverse-coded. **indicates that the observed median is significantly greater than 3 ($p<0.05$) and * indicates that the observed median is significantly less than 3 ($p<0.05$) in a one-tail Wilcoxon signed-rank test.*

The analysis reveals that there are some notable trends among the facets of job satisfaction. For 'Pay', items 1 and 10 suggest that while staff are satisfied with the salary, they are dissatisfied with salary increments. Regarding 'Promotion', there is a mixed perception about the chances of promotion. While they are highly satisfied with 'Opportunities' for 'Promotion' (Item 33, Median 4.00), staff also feel overall chance for 'Promotion' is limited (Item 2, Median =2). The 'Supervision' facet reflects strong positive perceptions for three items, except the item 12, where staff perceive their supervisors are unfair towards them. These findings suggest generally strong supervisory competence and positive interpersonal relationships among staff members. For 'Benefits', item 13 indicates a strong positive perception of the benefits they receive, whereas other items reflect a neutral view as their median are not statistically significant.

In the area of 'Contingent Rewards', items 5, 14 and 32 are statistically significant. Although staff feel that whenever they do a good job, they receive recognition, they have a negative perception regarding the appreciation and reward. For 'Operating Procedure', items 15, 24, and 31 are statistically significant. Although the staff believe that their good jobs are seldom blocked, and they have enough skill to perform their work effectively, they also report being overburdened with work. Additionally, the statements such as, 'When I do a good job, I receive the recognition for it that I should receive' and 'My efforts to do a good job are seldom blocked by red tape' highlight a work environment that values performance and minimizes bureaucratic obstacles.
About the 'Coworker' relations, items 7, 25 and 34 are statistically significant. The relationship among the staff members is with strong agreement on liking coworkers, but there are also concerns about bickering and fighting. The 'Nature of Work' facet received consistently high ratings, with all positive

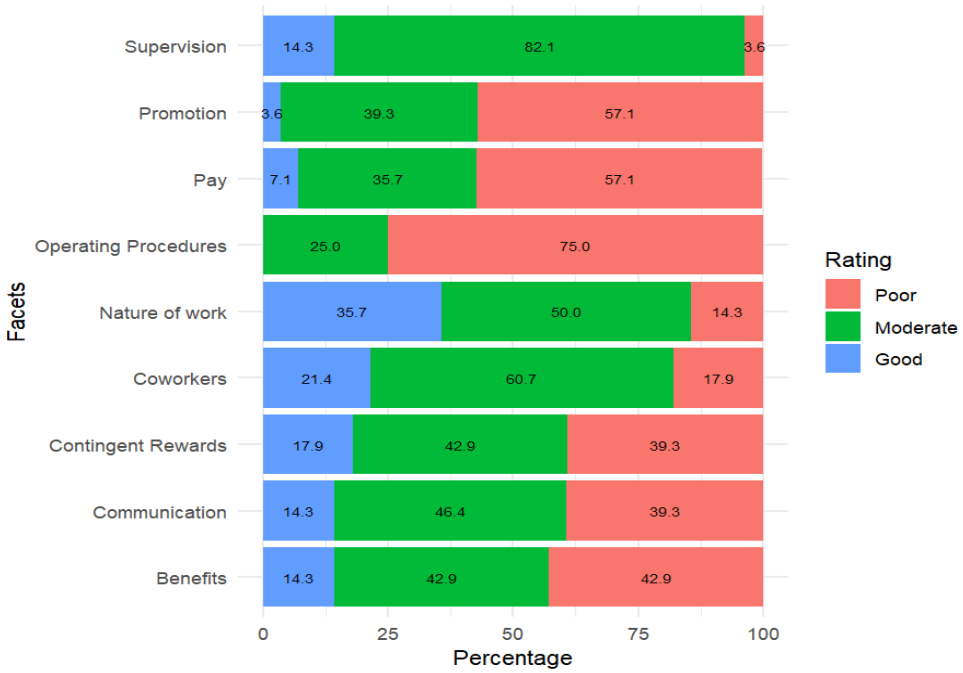
items scoring medians of 4.00 or more, and this indicates that staff enjoy their work and take pride in it. About the ‘Communication’, there is a high satisfaction in the general communication within the organization. However, concerns remain about a lack of organizational awareness.

Levels of Job Satisfaction in Percentage Distribution with Each Facet

The average for each facet was calculated by using the responses given by each respondent. Since there were no universal categorizations of this scale, authors categorized 1 and 2 as poor satisfaction, 3 as moderate satisfaction, and 4 and 5 as good satisfaction. This categorization was derived from the Likert scale that was used to measure job satisfaction. Based on this categorization, the stacked plot (Figure 1) was derived. Figure 1 illustrates the distribution of the job satisfaction level among the paraprofessionals, categorized by nine distinct facets of their work experience. Out of the nine facets, ‘Supervision’ was the most satisfied facet, with 82.1% rating it as moderate, 14.3% as good, and only 3.6% as poor. The second most satisfied facet was ‘Coworkers’, with a substantial majority reporting "moderate" satisfaction. The nature of work also demonstrates a positive trend, with the majority of participants rating it as "good" or "moderate."

The factor, ‘Operating Procedures’ of the library received the lowest satisfaction rating, with 75% of the participants rating it as poor, 25 % rated it as moderate, and no good rating at all. The study suggested that inefficient operating procedures make the work more challenging. Facets of ‘Communication’ and ‘Benefits’ revealed a more balanced distribution across satisfaction levels, suggesting varied experiences and potentially requiring further investigation to understand the underlying factors contributing to these mixed responses.

Figure 1
Levels of job satisfaction in percentage (%) with each facet



The study explored how different facets influence the level of job satisfaction. The average level of satisfaction for each facet is given in Table 3. Each statement was coded from 1-5, and negative statements were reverse-coded to calculate the mean and standard deviation. The facets of job satisfaction are organized in descending order based on their mean values, from highest to lowest. The analysis of the study provides a comprehensive understanding of the perception of paraprofessionals across different job satisfaction facets. The overall average mean value of job satisfaction was 3.12 (SD=0.43), and the average score of job satisfaction indicated by each respondent was categorized as poor (1-2), moderate (3), and good (4-5). The descriptive analysis shows that 75% of that, the paraprofessional staff members of the University of Jaffna library were moderately satisfied and 25% were poorly satisfied with their current job, while there was no one with a good satisfaction level.

Table 3
Overall means of Job satisfaction level in each facet

Facets	Mean	SD
Nature of the Work	3.61	0.79
Supervision	3.50	0.48
Co-workers	3.38	0.77
Benefits	3.13	0.71
Communication	3.11	0.82
Rewards	2.94	0.90
Pay	2.79	0.69
Promotion	2.74	0.64
Operating procedures	2.64	0.50
Overall satisfaction	3.12	0.43

The facet Nature of the Work received the highest satisfaction level with a mean value of 3.61 (SD= 0.79), suggesting that participants generally find their job roles meaningful, engaging, and fulfilling. This represents a key strength of the University library, as participants had a positive perception of the nature of the library work. Only 14 % of the respondents rated this facet as poor. The facet Nature of the Work was followed by 'Supervision' ($\bar{x}$ = 3.50, SD = 0.48) and then 'Coworkers' ($\bar{x}$ = 3.38, SD = 0.77). Concerning the 'Supervision', only 3.6 % responded as poor. This indicates that the majority of the library paraprofessionals were satisfied with the supervision they received. Employees' feeling of good supervision is a strength of the library, contributing to a positive trend to increase performance. Coworker relationships ($\bar{x}$ = 3.38, SD = 0.77) also scored well, which suggests a positive team environment in the library. Strong interpersonal relationships among supervisors and coworkers play an important role in increasing the job satisfaction of employees in an institution (Baxi & Atre, 2024). Strong team relationships can contribute to collaboration, motivation, and overall work satisfaction. These findings highlighted that the paraprofessionals at the

Library University of Jaffna appreciate their work, supervisors, and the coworkers they collaborate with, which can contribute to overall job satisfaction and productivity of the institution. The current study findings are supported by the study conducted by Parmer & East (1993). Support staff expressed a strong satisfaction level with supervision, coworkers, and their work.

'Benefits' ($\bar{x}$ = 3.13, SD = 0.71) and 'Communication' ($\bar{x}$ = 3.11, SD = 0.82) received moderate satisfaction scores, highlighting areas where improvement could boost overall job satisfaction. Improvements in internal communication channels are urgently needed to increase transparency within the institution.

Several factors, such as 'Rewards', 'Pay', 'Promotion' 'Opportunities', and 'Operating Procedures', scored below 3.00, suggesting dissatisfaction and requiring attention. The facet 'Rewards' exhibited a high standard deviation (SD = 0.90), reflecting diverse perceptions among the study participants. Some may feel recognized and rewarded, while others believe their efforts are not recognized. This inconsistency could lead to misunderstandings among employees. A study reported (Sarwar & Abugre, 2013) that better rewards induce employee job satisfaction and increase the institution's customer satisfaction. The lowest-scored facet was 'Operating Procedures' with a low standard deviation. This shows that participants are not satisfied with the current system and procedures in the library. Further research is needed to confirm whether participants have a clear knowledge of the operating procedures in the library, or the library may have an inefficient system and operating procedures.

Correlation between the demographic factors and the job satisfaction facets

The nine facets of job satisfaction were compared with the demographic details of the participants, such as "gender, age, experience, working library whether main library or branch library, distance from the residence to the library, educational qualification, and library science qualifications" using the Kruskal-Wallis H test and Mann-Whiteny U test to determine whether significant differences exist between the demographic characteristics of the participants and the facets.

The results of the Kruskal-Wallis H test showed that there was a significant difference in 'Pay', 'Benefits', and 'Rewards' among different experience levels of the participants ($p< 0.05$).

A pairwise comparison was performed using Bonferroni correction for these three facets to exactly locate the significant difference. Table 4 presents the mean values of job satisfaction concerning 'Pay', 'Benefits', and 'Rewards' across different experience levels of the participants.

Pay

The results indicate that the employees with less than five years of experience reported the highest mean satisfaction with 'Pay' ($\bar{x} = 3.22$), followed closely by those with more than 20 years of experience ($\bar{x}= 3.13$). However, employees in the 5–10 years and 11–20 years categories reported lower 'Pay' satisfaction levels ($\bar{x} = 2.25$) and ($\bar{x} = 2.52$), respectively. The Kruskal-Wallis test indicates a statistically significant difference in 'Pay' satisfaction across all experience levels ($p = 0.038$), suggesting that perceptions of 'Pay' vary significantly depending on the job experience.

Benefits

Employees with 5–10 years of experience reported the highest satisfaction on 'Benefits' ($\bar{x}$= 4.00), while those with 11–20 years had the lowest rating ($\bar{x}$ = 2.70). The remaining groups, those with less than 5 years ($\bar{x}$= 3.55) and more than 20 years of experience ($\bar{x}$ = 3.13), fell in between. The Kruskal-Wallis test shows that differences in satisfaction with the 'Benefits' employees receive were statistically significant (p = 0.006), indicating that employees with 11–20 years of experience perceive benefits less favourably than their less experienced or more experienced counterparts.

Satisfaction with the 'Benefits' is also significantly lower among staff with 15 to 20 years of experience than among staff with less than five years and 5 to 10 years of experience.

Rewards

The highest satisfaction with 'Rewards' was reported by the respondents with more than 20 years of experience ($\bar{x}$ = 3.63), followed by those with less than 5 years ($\bar{x}$ = 3.60). Respondents in the 11–20 year group reported lower satisfaction with factor 'Rewards' ($\bar{x}$= 2.48), with the 5–10 year group showing the lowest satisfaction ($\bar{x}$= 2.13). The Kruskal-Wallis test also yielded a significant result (p = 0.005), indicating that employee experience levels significantly influence perceptions of the job satisfaction facet rewards.

In all three cases, the staff with 15 to 20 years of experience had poor levels of satisfaction, and the staff with less than 5 years of experience had a moderate level of satisfaction. The satisfaction regarding the factor 'Benefits' among the staff with 5 to 10 years of experience was good.

Table 4

Mean Employee Satisfaction Ratings for 'Pay', 'Benefits', and Rewards across Experience Levels

Experience (Years)	Mean ($\bar{x}$)		
	Pay	**Benefits**	**Rewards**
<5	3.22	3.55	3.60
5-10	2.25	4.00	2.13
11-20	2.52	2.70	2.48
>20	3.13	3.13	3.63
p value of Kruskal-Wallis H test	p =0.038	p =0.006	p =0.005

The analysis further revealed that other demographic factors such as gender, age, educational and professional qualifications do not have any influence on any of the nine facets of job satisfaction ($p>0.05$) of the paraprofessionals working at the University of Jaffna Library. Further research is needed to explore this finding with a large study sample, considering other university libraries in Sri Lanka. In contrast, Fitch (1990) concluded that women paraprofessionals working at Alabama academic libraries were more satisfied than men. Another study by Adegboye et al. (2021) concluded that gender differences did not influence the level of satisfaction among library staff members working in universities.

Job satisfaction level among branch libraries

The Mann-Whitney U test confirmed that there was a significant difference ($p=0.031$) in the level of satisfaction with 'Supervision' between the main library ($\bar{x}=3.36$) and branch libraries ($\bar{x}=3.75$). Even though there was a significant difference in the level of satisfaction with 'Supervision' between the main library and branch libraries, both satisfaction levels were at moderate levels. In large libraries, contact with the supervisor cannot be as

personal as in small libraries, where the number of employees is comparatively smaller. A similar test was conducted to check the difference in nine facets between branches situated in two different districts. The results revealed that there was a significant difference in the satisfaction of 'Pay' (p=0.038) and 'Rewards' (p=0.038) between the branch libraries situated in Killinochchi district and Jaffna district. The satisfaction level of 'Pay' for the staff attached to Killinochchi branch libraries ($\bar{x}$=3.50) is higher than the paraprofessional staff attached to Jaffna branch libraries ($\bar{x}$=2.38). Despite receiving equal pay under the standardized state university salary system, the job satisfaction level is higher among staff working at the branch libraries in Kilinochchi than Jaffna. The Killinochchi branch libraries primarily employed junior staff members who are relatively junior to the workforce. Moreover, Jaffna is a more urbanised area than Killinochchi. Therefore, the cost of living in Killinochchi is comparatively less than the Jaffna. This may lead to the staff working in Killinochchi having higher satisfaction with pay than the staff who are working in Jaffna. Given Sri Lanka's economic challenges and limited job opportunities, these employees may perceive their employment as a valuable opportunity, leading to increased job satisfaction. The scarcity of new recruitment due to the economic crisis further reinforces their appreciation for permanent employment.

Further research is needed to explore the underlying factors influencing these perceptions. Similarly, the satisfaction on 'Rewards' for the staff attached to A libraries ($\bar{x}$=3.75) was higher than that of Killinochchi branch libraries ($\bar{x}$=2.42). In both aspects, the paraprofessionals attached to the libraries in Killinochchi district had moderate satisfaction, while the same category of staff attached to the branch libraries in Jaffna district had poor satisfaction.

Conclusion & Recommendation

The survey results provide the overall satisfaction level of the paraprofessional staff members working at the University of Jaffna library. The overall mean satisfaction of the paraprofessional staff was 3.12, indicating that employees are neither highly dissatisfied nor highly satisfied. Paraprofessional staff members are moderately satisfied with their jobs. There is room for improvement in enhancing overall work satisfaction. The most satisfying facet of these employees identified from this research was the Nature of the Work; it was followed by 'Supervision', then Co-workers. The survey results revealed that the University of Jaffna library has strong fundamentals, where paraprofessional staff enjoy their work and appreciate their supervisors and co-workers. The staff members were moderately satisfied with the 'Benefits' and internal 'Communication'. Enhancing communication strategies such as regular meetings, feedback mechanisms, and transparent library policies can improve communication in the library, leading to increased job satisfaction. Several facets were scored with a mean value below 3, signaling potential dissatisfaction. The most urgent areas brought up by the study are 'Rewards', 'Pay', 'Promotion', and 'Operating Procedures'. Addressing concerns on 'Rewards', 'Pay', job 'Promotion', and workplace policies will be crucial in improving overall satisfaction. Improving salary structures or providing incentives could enhance job satisfaction. The lowest-rated facet concerning job satisfaction was 'Operating Procedures' in the library. Participants may feel inefficient systems and procedures. The library management should identify and eliminate inefficient procedures in the library operations and get the involvement of the paraprofessional staff members in the process of improvement discussions.

Concerning the correlation between the demographic characteristics of the library paraprofessionals and the job satisfaction facets, there is a statistically significant difference in 'Pay', 'Benefits', and 'Rewards' among different experience levels of the participants ($p< 0.05$). Experience in library services influences the job satisfaction level of paraprofessional employees at the University of Jaffna Library. The analysis further concluded that other demographic factors such as gender, age, and educational & professional qualifications do not have any influence on any of the studied nine facets of job satisfaction ($p>0.05$) of the paraprofessionals working at the University of Jaffna library. The results highlighted an interesting trend where paraprofessional employees with less than five years of working experience and employees with more than twenty years of working experience reported higher satisfaction with 'Pay' and 'Rewards' than mid-career (5- 20 years of working experience) paraprofessional employees. It was statistically proved that there was a significant difference ($p=0.031$) in the level of satisfaction with 'Supervision' between the type of working library, namely the main library ($\bar{x}=3.36$) and branch libraries ($\bar{x}=3.75$). The type of working library, whether the main library or branch library, also significantly affects the job satisfaction facet of 'Supervision', which affects the level of job satisfaction of the paraprofessionals. The job satisfaction survey results provide a comprehensive understanding of the paraprofessional staff members' perceptions across various job satisfaction facets. Further, the study identified the areas concerned to be improved. By focusing on these areas, the University of Jaffna can enhance the job satisfaction of the library paraprofessionals, leading to higher engagement and overall productivity.

References

Abdulrahman, A., Abubakar, M. Z., & Ahmed, M. A. (2023). Levels of job satisfaction among para-professionals in academic libraries in Bauchi state. *Library Philosophy and Practice*, 7610. https://digitalcommons.unl.edu/libphilprac/7610

Adegboye, M. O., Abubakar, H. O., & Osunkentan, O. A. (2021). Global trend in career satisfaction, self-perception, and gender differences among library personnel in the university: An important parameter for organizational success. *Library Philosophy and Practice*, 5125. https://digitalcommons.unl.edu/libphilprac/5125

Amarakoon, L. R. (1995). *Study to determine the job satisfaction of health sciences librarians in Sri Lanka* [Unpublished fellowship thesis]. Sri Lanka Library Association.

Ariyo, E. O., & Okwilagwe, A. O. (2020). Influence of organisational culture on job satisfaction of library personnel in selected academic libraries in three states in South-West, Nigeria. *Library Philosophy and Practice*, 4016. https://digitalcommons.unl.edu/libphilprac/4016

Armstrong, M. (2006). *A handbook of human resource management practice* (10th ed.). Kogan Page.

Baxi, B., & Atre, D. (2024). Job Satisfaction: Understanding the meaning, importance, and dimensions. *Journal of Management and Entrepreneurship Research*, *18*(2), 34-40.

Brun, J. P., & Dugas, N. (2008). An analysis of employee recognition: Perspectives on human resources practices. *The International Journal of Human Resource Management*, *19*(4), 716-730. https://doi.org/10.1080/09585190801953723

Corrall, S., & Jolly, L. (2019). Innovations in learning and teaching in academic libraries: Alignment, collaboration, and the social turn. *New Review of Academic Librarianship*, *25*(2-4), 113-128. https://doi.org/10.1080/13614533.2019.1697099

Fitch, D. K. (1990). Job satisfaction among library support staff in Alabama academic libraries. *College & Research Libraries*, *51*(4), 313-320.

Hussain, S., & Soroya, S. H. (2017). Exploring the factors affecting job satisfaction of paraprofessional staff working in University Libraries of Pakistan. *Library Review*, *66*(3), 144-162. https://doi.org/10.1108/LR-09-2016-0074

Kuruppu, D. C. (1998). How to maximize the job satisfaction of professional librarians? *Sri Lanka Library Review*, *12*(20),71-78.

Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1297–1349). Rand McNally.

Marasinghe, M. P. L. R., & Wijayaratne, A. (2018). The impact of gender differences on job satisfaction of university library professionals. *Journal of the University Librarians Association of Sri Lanka*, *21*(2),1-19. https://doi.org/10.4038/jula.v21i2.7905

Martin, J. (2020). Job satisfaction of professional librarians and library staff. *Journal of Library Administration*, *60*(4), 365-382. https://doi.org/10.1080/01930826.2020.1721941

Murray, R. A. (1999). *Job satisfaction of professional and paraprofessional library staff at the University of North Carolina at Chapel Hill* (Master's paper, University of North Carolina at Chapel Hill). ERIC. https://files.eric.ed.gov/fulltext/ED437041.pdf

Opeke, R., Ikonne, C. N., & Adewoyin, O. O. (2019). Job satisfaction among library personnel in public universities in south-west Nigeria. *Information Impact: Journal of Information and Knowledge Management, 10*(2), 124-138. https://doi.org/10.4314/iijikm.v10i2.9

Parmer, C., & East, D. (1993). Job satisfaction among support staff in twelve Ohio academic libraries. *College & Research Libraries, 54*(1), 43-57.

Pugno, M., & Depedri, S. (2010). Job performance and job satisfaction: an integrated survey. *Economia politica, 27*(1), 175-210. https://doi/10.2139/ssrn.1402566

Ranaweera, R. A. A. S., Si Li., & Bodhinayaka, D. (2018). Job satisfaction of library staff: A study based on university libraries in Sri Lanka. *International Journal of Human Resource Studies*, *8*(3), 5359-5359.

Rubin, R. E. (1991). Human resource management in libraries: Theory and practice. Neal-Schuman Publishers.

Sarwar, S., & Abugre, J. (2013). The influence of rewards and job satisfaction on employees in the service industry. *The Business & Management Review*, *3*(2), 22-32.

Spector, P. E. (1985). Measurement of human service job satisfaction: development of the job satisfaction survey. *American Journal of Community Psychology*, *13*(6), 693-712.

Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Sage.

Thapisa, A. P. N. (1992). Work, its significance, meaning and challenges among library assistants. *Journal of Library Administration, 16*(4), 19-43.

Thirunavukarasu, K. (1994). *Job satisfaction among university professional librarians in Sri Lanka* (Unpublished master's thesis). University of Colombo.

Wijeweera, K. G. G. (2004). *Job satisfaction of professionals in agricultural libraries in Sri Lanka* (Unpublished master's thesis). University of Colombo.

Journal of the University Librarians Association of Sri Lanka, Vol. 28, Issue 2, July 2025, 118-156, DOI: https://doi.org/10.4038/jula.v28i2.8113

Assessing telecentres as a strategy for bridging the digital divide in rural communities of developing countries: A narrative review

Sakeena Alikhan[1] and Mohideen Mohamed Alikhan[2]

ABSTRACT

Digital inclusion is increasingly recognized as a pathway to reducing social exclusion, as access to and meaningful use of ICTs enables individuals to participate more fully in economic, social, and civic life. However, a persistent digital divide continues to marginalize rural communities in developing countries, where socioeconomic vulnerability, infrastructural deficits, and limited digital literacy restrict opportunities for digital engagement. Telecentres have emerged as a widely adopted strategy to bridge this divide by offering public access to ICT infrastructure and skills training. Yet, despite numerous telecentre initiatives across South Asia, Southeast Asia, and Africa, questions persist about their effectiveness and long-term sustainability. A clear synthesis of evidence on how telecentres function within rural developing contexts remains underexplored.

[1]Senior Assistant Librarian, University of Colombo
Email: sakee@lib.cmb.ac.lk, https://orcid.org/0000-0002-7300-3611

[2]Senior Lecturer, Department of Geography, University of Peradeniya
E-mail: alikhan@arts.pdn.ac.lk, https://orcid.org/0000-0003-0485-0291

Received: 02 January 2025, Accepted revised version: 30 May 2025.

This study aims to assess the role of telecentres in addressing both the first-level digital divide (access) and the second-level digital divide (skills and meaningful use), identify challenges to their sustainability, and provide policy recommendations for improvement. Employing a narrative review methodology, the study synthesizes findings from eight empirical studies selected through comprehensive searches in Scopus and Web of Science. Thematic synthesis reveals that telecentres provide critical services that enhance digital access and literacy in rural communities. However, they face challenges categorized into technical, operational, socioeconomic-cultural, and policy/systemic dimensions. The study highlights recommendations, including infrastructure upgrades, capacity-building initiatives, localized content development, inclusive outreach strategies, and stakeholder collaboration. This review contributes to the discourse on digital inclusion by offering insights into how telecentres can be more effectively integrated into community development efforts, ultimately reducing social exclusion and promoting equitable access to digital resources in marginalized rural areas.

***Keywords**:* Digital divide, Telecentres, Digital inclusion, Rural communities, Developing countries, Narrative review

Introduction

Information and Communication Technologies (ICTs) promises unprecedented opportunities for economic development, social inclusion, education, and civic participation (Ragnedda et al., 2022). It has become fundamental tools for navigating modern life and accessing essential services (Muñoz & Valencia, 2023). However, not every person or group or between or within country will have the equal opportunity to reap the benefits of information and communication technology because of social, cultural, and political impediments (Helsper & Reisdorf, 2017).

In industrialized nations, 90% of individuals used the Internet in 2021, compared to 57% in developing nations (ITU, 2024). Concerning disparities in connectivity and online access continue to exist in the world's rural areas, despite the fact that mobile broadband networks reach the vast majority of the world's urban areas. In metropolitan regions around the world in the year 2020, 76% of households had access to the Internet at home, which was almost twice as high as the percentage for families in rural areas (39%) (ibid). This disparity, broadly termed the 'digital divide,' remains a critical global challenge, particularly pronounced in rural communities of developing countries where limited infrastructure, economic constraints, and lower educational attainment often hinder ICT adoption and use (Dawood et al., 2019).

The digital divide has evolved into a complex, multi-layered phenomenon. Initially conceptualized in 1995 as the first-level digital divide, it primarily addressed disparities in physical access to ICT infrastructure, devices, and the Internet connectivity (NTIA, 1995). While ensuring access remains a foundational concern, subsequent research and

policy discussions have highlighted a deeper dimension. The second-level digital divide, introduced in the Organization for Economic Co-operation and Development (OECD) report in 2001, extends beyond connectivity to encompass variations in digital literacy, technical skills, user motivation, and the ability to translate access into meaningful engagement (Scheerder et al., 2017). Addressing both levels is crucial for ensuring that rural communities of developing countries can effectively participate in the digital age.

Rural communities reside in low-density regions, typically with fewer than 150 inhabitants per square kilometer (FAO & OECD, 2007). These areas often face limited infrastructure, restricted access to essential services, and an economy largely dependent on agriculture and traditional industries (Bezu, 2021). Similarly, the term "developing countries" is used to describe countries with a relatively low per capita income, typically poorly industrialized societies that lack fundamental health and sanitation services, pervasive poverty, and low literacy rates (Chantada et al., 2010). These interconnected barriers exacerbate inequalities in ICT access and digital participation, highlighting the urgent need for strategic interventions to effectively bridge the digital divide.

In bridging the digital divide, various initiatives have been implemented globally (Robinson et al., 2020). Among the most prominent, especially in developing contexts, are telecentres – publicly accessible facilities offering shared access to computers, the Internet, and often related support and training services (Oestmann, & Dymond, 2001). Telecentres, also referred to as community technology centres, information kiosks, cybercafés, digital hubs, ICT hubs, or public access points, are

frequently regarded as essential tools for bridging the digital divide (Furuholt & Sæbø, 2018).

However, the promise of telecentres has often been met with mixed results. While numerous initiatives have been launched, often with support from governments, NGOs, and international donors, questions persist regarding their long-term sustainability and their true effectiveness in achieving desired outcomes (Islam & Tsuji, 2011). Challenges related to funding, infrastructural limitations (like unreliable electricity or poor Internet connectivity), sociocultural barriers, lack of relevant content, and difficulties in maintaining community engagement frequently hinder their impact and longevity (Faroqi, Siddiquee, & Ullah, 2019). Furthermore, the extent to which telecentres successfully transition from providing basic access to fostering deeper digital competencies and usage remains a critical area of inquiry.

While numerous individual studies have explored specific telecentre initiatives or aspects of the digital divide (Faroqi et al., 2019; Ibrahim & Ainin, 2009; Islam & Tsuji, 2011), there is a need for a systematic synthesis of evidence that specifically examines their dual role in addressing both the first and second-level digital divides within the unique context of rural communities in developing countries. Such a review is essential to inform evidence-based strategies for policymakers, NGOs, and other relevant institutions, including libraries which often share similar goals of promoting information access and digital literacy within communities. This narrative review aims to address this gap by comprehensively synthesizing existing research literature.

Objectives

- To assess the role of telecentres in bridging the first-level digital divide (ICT access) and second-level digital divide (digital literacy and usage) in rural communities of developing countries.
- To identify systemic challenges that hinder the sustainability of telecentres.
- To provide evidence-based recommendations to enhance telecentre effectiveness and integration into sustainability.

Concept of Digital Divide

It was in Knoxville, Tennessee, in 1996, during a symposium on the digitization of American society, that Al Gore first used the term "digital divide". This event also marked one of the first occasions that the topic of the digital divide was brought up in public discourse (Ragnedda, 2017). However, the digital divide terminology has been defined by the US Department of Commerce's National Telecommunications and Information Administration (NTIA) through their reports in 1995, 1998 and 1999. According to them, digital divide is the socioeconomic disparity that exists between populations that have access to computers and the Internet and those that do not (NTIA, 1995,1998,1999).

At this early stage in the process of its development, the idea of the digital divide was most commonly understood to refer to the difference that exists between those who had access to modern technology and those who did not (van Dijk, 2020a). In its most basic terms, the digital divide was described as a type of inequality in access to modern ICTs, and in particular to the Internet (van Dijk, 2006). It was commonly called as a

first-level digital divide (Attewell, 2001). However, after some time, researchers and policy makers realized that this definition of the digital divide was too restrictive.

According to Attewell (2001), we have advanced from the first-level of the digital divide, which was mostly focused on access to the Internet, to the second-level, which is more complex and multidimensional and is based on the differences in how people utilize computers and the Internet. In other words, not only the physical connection to the Internet but also the various ways that it is used is taken into consideration. It reflects in the report of the OECD, 2001,

> "The gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities" (, p5)

This definition clearly encompasses variations in Internet usage. Such disparities form the basis of the second-level of the digital divide, which addresses the skills required to use ICTs and the types of online activities people engage in, as well as the interactions between these digital divide elements (van Deursen & van Dijk, 2014).

Since around 2015, research and policy discussions have increasingly focused on the third-level digital divide, which goes beyond the first- and second-level divides (van Dijk, 2020b). While the first-level divide concerns access to digital technologies, and the second-level divide addresses differences in digital skills and usage, the third-level digital

divide highlights disparities in the outcomes of Internet use. The third-level digital divide addresses disparities in the returns from Internet use within groups of users who display generally similar usage profiles and who have largely autonomous and unhindered access to information and communication technologies as well as the Internet infrastructure (Helsper, van Deursen, & Eynon, 2015). Therefore, third-level divides pertain to variations in individuals' ability to translate their Internet access and use into offline outcomes. Therefore, research into the third-level divide attempts to determine who, and in what ways, benefits from Internet use in terms of a wide range of offline outcomes (Scheerder et al., 2017).

However, this study primarily focuses on the first- and second-level digital divides, examining how telecentres help bridge these gaps in rural communities in developing countries. The third-level digital divide, which relates to the outcomes of Internet use, is beyond the scope of this research and can be considered a separate area of study.

Methodology

This study employs a nonsystematic narrative review to examine the role of telecentres in bridging the digital divide in rural communities of developing countries. A narrative review provides a broad, thematic synthesis of existing research rather than adhering to structured inclusion/exclusion criteria or systematic screening processes (Green et al., 2006). This approach allows for a comprehensive discussion of telecentre effectiveness, sustainability, and policy implications.

A comprehensive literature search was conducted using Scopus and Web of Science; two widely recognized academic databases that provide rich publishing metadata, impact indicators, and extensive coverage across

disciplines (Pranckutė, 2021). Their continuous updating ensures access to high-quality peer-reviewed research relevant to telecentre initiatives. Search terms were carefully selected to capture literature discussing telecentre models, ICT access, and digital inclusion challenges, ensuring a broad yet focused scope of analysis. The search strategy incorporated Boolean operators to refine results, including:

- "rural community*" OR "rural area*" OR "rural population*"
- "telecentre*" OR "telecenter*" OR "ICT hub*"
- "digital divide" OR "digital inequalit*" OR "digital exclusion"

Additionally, Litmaps was leveraged to visualize citation networks and identify influential studies related to telecentre initiatives. This tool enabled a comprehensive mapping of key research themes, allowing for the selection of foundational and recent studies that contribute to the understanding of telecentre effectiveness.

Rather than applying strict inclusion/exclusion criteria, a diverse selection of studies was analyzed, with priority given to empirical research that offer a comprehensive exploration of telecentre effectiveness and challenges in the context of developing countries. This review synthesized findings from key studies that were thematically relevant.

Result and Discussion

The study primarily focused on literature that addresses the digital divide through telecentres initiatives in rural communities of developing countries. Therefore, only a limited number of relevant articles were identified and analyzed in order to address the study's objectives. The selected articles cover three geographic regions: South Asia, Southeast Asia, and Africa. In South Asia, studies were conducted in Sri Lanka (Gamage & Halpin, 2007) and Bangladesh (Siddiquee & Faroqi, 2021). In Southeast Asia, one study was conducted in Malaysia (Hussain et al., 2009). The remaining studies were from Africa, including Botswana (Morakanyane, 2010), Malawi (Kapondera & Hart, 2016), Kenya (Chege et al., 2019), Tanzania (Lwoga & Chigona, 2020), and South Africa (Alao et al., 2021).

Table 1 presents a summary of the main characteristics of the studies included in the review. Among the included studies, three employed mixed methods (Gamage & Halpin, 2007; Siddiquee & Faroqi, 2021; Kapondera & Hart, 2016), two utilized quantitative methods (Morakanyane, 2010; Hussain et al., 2009), and three adopted qualitative approaches (Chege et al., 2019; Lwoga & Chigona, 2020; Alao et al., 2021).

Table 1

Fundamental attributes of included studies

Author and Year	Telecentre's Name	Country	Target population and sample size	Research method	Data collection method
Gamage & Helpin, (2007)	Nanasalas	Sri Lanka	Rural community and 42 Nanasalas and 338 users	Mixed method	Interviews, observation, FGDs, and Survey
Siddiquee & Faroqi, (2021)	Union Digital Centers (UDCs)	Bangladesh	Rural community and 16 UDCs and 154 users	Mixed method	Interviews, and Survey
Morakanyane (2010)	Kitsong Centres	Botswana	Rural community and 316 participants	Quantitative	Survey
Kapondera & Hart, (2016)	Lupaso Community Telecentre	Malawi	Rural community and 130 individuals	Mixed method	Survey, semi-structure interviews, and observation
Hussain et al., (2009)	E-community centeres	Malaysia	Rural community's officers - 24	Quantitative	Survey
Chege, et al., (2019)	Maarifa Telecentres	Kenya	Rural community and 20 users and 13 administrative officers	Qualitative	Interviews and FGDs
Lwoga, & Chigona, (2020)	Sengerema Telecenter, Kilosa Rural Services and Electronic	Tanzania	Rural community and 73 individuals	Qualitative	FGD, Semi-Structure interview

	Communication (KIRSEC), Somnambule Maarifa Center				
Alao, et al., (2021)	Cape Access Telecentres	South Africa	Rural community and 39 individuals	Qualitative	FGD, Semi-Structure interviews and observation

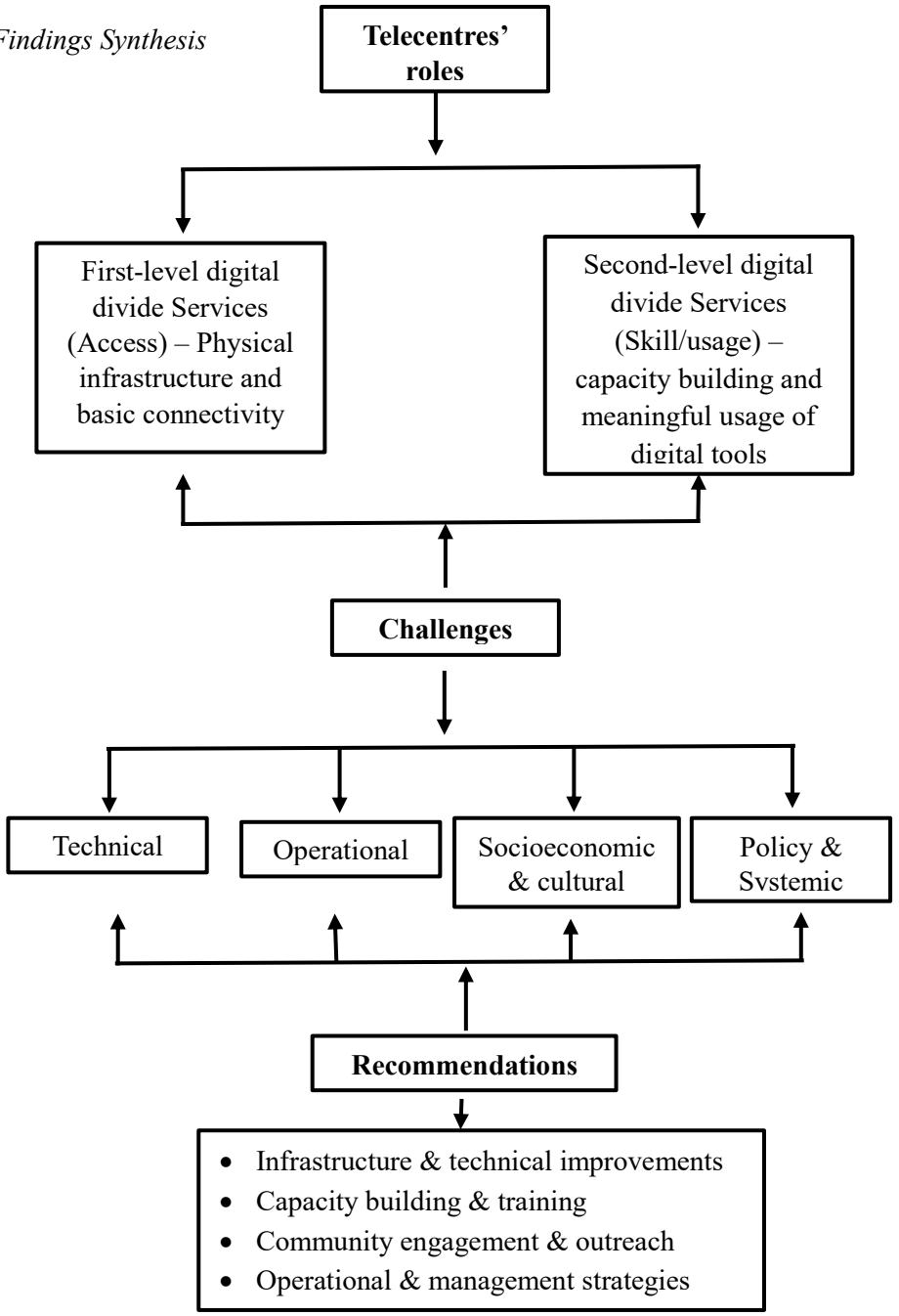
Source: Compiled by Authors

Synthesis of the findings

The reviewed studies provide strong evidence that telecentres contribute significantly to bridging both the first-level (access to digital infrastructure) and second-level (digital skills and meaningful use) digital divides among rural communities in developing countries. However, these initiatives encounter six key categories of challenges: technical, operational, socio-economic and cultural, and policy and systemic challenges. These challenges pose substantial threats to the sustainability of telecentres. Nevertheless, the analysis reveals several actionable and context-specific recommendations proposed by the studies to mitigate these challenges and enhance the long-term viability of telecentres. Figure 1 presents a synthesized framework summarizing these findings, while table 2 provide detailed summaries of the included studies.

Figure 1

Findings Synthesis



Source: Authors

Table 2

Telecentre's services, challenges and recommendations

Author and Year	Services Addressing First-Level Digital Divide	Services Addressing Second-Level Digital Divide	Challenges to Sustainability	Recommendations
Gamage & Helpin, (2007)	• Accessing the computers and internet • Scanning • Computer printing	• Computer training courses, • Use to basic communication • Use to e-commerce and information on employment • Use to national, international and local information resources	•Dependence on government subsidies. •Maintenance and supplies costs •Lack of management skills	• Improve Nanasala services based on community needs • Strategic location selection • Collaboration with public libraries • Increase awareness through targeted advertising issues identification for Nanasala operators • Make content available in local languages • Provide affordable and cost-effective equipment based on needs
Siddiquee & Faroqi, (2021)	Providing access to digital devices and internet for those lacking access.	• Use for information and services, both governmental and commercial, relevant and in line with the needs of rural people. • Computer training	• Insufficient income due to limited use of services • power blackouts • lack of high-speed internet • lack of integration with government agencies	• Ensuring contents are compatible, retaining, and reinforcing the current values and uniqueness of UDCs. • Scaling up current capacity and mandates to offer an increased level of services
Morakanyane (2010)	• Access to internet, email, locally generated content • secretarial and desktop publishing services (typing, photocopying, printing, scanning,	• Enhancing ICT skills • Distribution of locally generated information for rural economy development	• Lack of awareness • Poor marketing • Location of centres • Lack of a sustainability plan	• Develop a brand and marketing strategy • Find a more accessible location • Increase number of training staff • Introduce computing lesson • Collaborations with stakeholders

	laminating, and designing of programs and cards)			
Kapondera & Hart, (2016)	• Provision of communication facilities • Office services (photocopying, printing, binding, lamination, scanning, faxing) • Internet access	• Computer tutorials, access to information for personal development, • Skills improvement, and knowledge acquisition	• Lack of internet searching skills • Frequent electricity blackouts • Lack of local content • Fees charged • Unreliable power supply • Bureaucratic delays • Lack of expertise within the telecentre • Poor staff attitudes	• Enhance services with information literacy and literacy education programs • Provide programs targeting different community groups • Conduct regular community needs assessments • Invest in alternative power supply • Collaborate with organizations to create localized content • Ensure technical expertise within telecentres • Train staff in customer care
Hussain et al., (2009)	• Internet connectivity • Computer devices accessibility • PC trouble shooting and maintenance services • Printing services	• Basic computer course • MS Office course • Basic internet course • Awareness programs about 'importance of ICT'	• Malfunctioned PCs and printers • Internet is not reliable	• Revise job specifications for ICT officers • Provide additional incentives for ICT officers • Prepare funding to develop computer-assisted language learning content • Implement consistent expert monitoring
Chege, et al., (2019)	• Providing access to computers and the Internet	• Consolidating and creating relevant content to help satisfy users' information needs	• Poor infrastructure, including connectivity and internet access • Relevance of content	• Widen operations to serve communities outside Arid and Semi-Arid Lands • Set up more telecentres in convenient areas

		• E-government services, e-commerce and agricultural development • ICT skills training	• Users' lack of ability to navigate the internet and analyze information • Limited operating hours • Lack of information content in local languages • High levels of poverty • Declining interest from donors	• Repackage information and share it widely • Enhance publicity using community media • Undertake aggressive seminars and sensitization programs to influence the community to relax cultural beliefs that restrict women
Lwoga, & Chigona, (2020)	• Internet and Digital devices access	• Computer training • access to information on health, education, and human rights • Use for communication with families/friends	• Inadequate computers, space, and personnel • Unreliable electrical power • Slow internet connectivity • Low-level of education • Language barrier • Lack of ICT skills and Low technology efficacy • Financial challenge	• Conduct regular assessments to understand rural women's needs • Guide rural women on accessing relevant website • Introduce demand-driven short courses including literacy programs • Introduce gender-sensitive ICT training programs collaborate with organizations and communities to develop local content • Explore alternative power sources and improve ICT infrastructure

Alao, et al., (2021)	• Free access to computers, internet, printing,	• Computer skills training (basic and ICDL certificates) • Support in job-seeking, applying for government grants • Awareness campaigns increasing access • Assistance by trained staff for ICT use	• Lack of computer skills, low education levels, language barriers (training mainly in English, not local languages), gender-biased usage patterns (male dominance), limited number of computers and space in centers, lack of awareness of telecentre services, unemployment, socio-cultural norms hindering women's access	• Promote awareness campaigns to increase telecentre utilization • Include women-specific empowerment programs in telecentre design and planning phase; • Provide training in local languages • Increase computer availability and space • Promote gender equality in use • Integrate telecentres strategically in ICT policies

Source: Authors

Role of Telecentres in Rural Communities of Developing Countries

According to studies reviewed, rural communities of developing countries face socio-economic vulnerability. They often consist of marginalized and characterized communities by a high poverty line and low-income levels, with many living on very little, or even having no reported income among groups like unemployed youth and household workers (Kapondera & Hart, 2016; Siddiquee & Faroqi, 2021). Therefore, they are frequently described as financially disadvantaged and economically challenged, lacking the funds necessary to access essential services, including information services (Chege et al., 2019). Their livelihoods are often heavily reliant on traditional activities such as farming and fishing, although there is an observed shift towards non-farm income-generating activities in some areas (Kapondera & Hart, 2016).

As a result of such conditions, rural communities in many developing countries have experienced a persistent digital divide (Siddiquee & Faroqi, 2021). This divide restricts their participation in the digital age and contributes to their social exclusion from the broader information society. To mitigate this exclusion, several countries have introduced digital inclusion initiatives aimed at bridging the gap between individuals with and without access to digital technologies (Robinson et al., 2020). Among the several digital inclusion initiatives, telecentre is a key initiative in the rural areas and its central role is to bridge the digital divide (Watat & Mekonnen, 2020).

Telecentre is "a physical space that provides community access to ICTs with the purpose of enhancing educational, personal, social, and economic development" (Harris, 2001. p73). According to the reviewed

papers, telecentres play significant role for digital inclusion of rural communities. Its services can be categorized into two levels of the digital divide: the first-level, which emphasizes access to physical infrastructure, and the second-level, which focuses on skills development and meaningful use.

First-level digital divide services primarily ensure that communities have the necessary hardware and connectivity. According to Gamage and Halpin (2007), Nanasala telecentres in Sri Lanka offer essential first-level digital divide services by providing access to computers, Internet connectivity, and peripheral devices such as printers and scanners. Similarly, Alao et al. (2021) highlight that Cape Access telecentres in South Africa focus on offering free access to computers, Internet services, and printing facilities. Additionally, basic office services like photocopying, faxing, binding, laminating, and desktop publishing support help users fulfill day-to-day documentation needs, as reported by Morakanyane (2010) and Kapondera and Hart (2016). Technical support, including PC troubleshooting and maintenance, is also crucial in maintaining continued access, with Hussain et al. (2009) highlighting the role of PC repair services in rural settings.

On the other hand, services for bridging the second-level digital divide to develop the digital skills are required for productive engagement. For instance, Telecentres in Tanzania, and Malaysia, providing services to include digital literacy training, such as basic computer use and MS Office applications and Internet courses (Lwoga & Chigona, 2020; Hussain et al., 2009). Furthermore, Maarifa telecentre in Kenya, and Union Digital Centers in Bangladesh, promote the use of e-government and e-commerce

platforms, such as online banking and job portals for rural communities. (Chege et al., 2019; Siddiquee & Faroqi, 2021). Apart from that, the development and dissemination of localized content—covering health, education, and economic resources in native languages—help tailor digital engagement to community needs (Morakanyane, 2010; Kapondera & Hart, 2016). Finally, community empowerment initiatives address social inclusion through gender-sensitive programs, job-seeking support, and awareness campaigns, as demonstrated by Alao et al. (2021) and Gamage & Halpin (2007). Together, these two levels of services play a vital role in addressing both access and usage gaps in marginalized communities.

Overall, these initiatives represent critical efforts to bridge the digital divide by ensuring that rural communities have both the foundational infrastructure and the digital skills necessary for meaningful digital participation. By addressing hardware provision, basic connectivity needs, and offering digital skills training such as introductory courses and awareness programs on the importance of ICT—telecentres help lay the groundwork for deeper digital engagement. These efforts support not only individual empowerment but also contribute to broader community development.

Even though telecentres have contributed to bridging the digital divide and have played a role in enhancing and empowering the lives of rural communities, their implementation has not been without challenges. Telecentre programs in rural areas have often proven difficult to maintain and sustain over long term (Noor, 2021). The following section explores, with empirical evidence, the challenges that telecentres face in achieving long-term sustainability.

Challenges to Telecentres Sustainability in Rural Communities

Despite their potential, telecentres in rural areas face numerous challenges that hinder their effectiveness and long-term sustainability. According to the included studies, these challenges can be categorized into four main areas: technical, operational, socioeconomic and cultural, and policy/systemic.

Technical challenges:

Telecentres face significant technical challenges that impede their functionality, limit user adoption, and ultimately affect their sustainability. A primary issue is related to equipment, including the obsolescence or non-functioning nature of existing computers, printers, and other ICT tools (Chege et al., 2019; Hussain et al., 2009). Telecentres may also have an inadequate number of computers or insufficient physical space, restricting simultaneous access for users (Alao et al., 2021; Kapondera & Hart, 2016). Power supply problems represent another major technical hurdle, with Siddiquee & Faroqi, (2020);Kapondera & Hart, (2016), highlighting unreliable electrical power, frequent interruptions, or blackouts, particularly as primary constraints in rural areas. Connectivity issues are also prevalent, described as unreliable, slow Internet access, and unstable satellite connections, which prevent telecentres from being fully operational (Lwoga & Chigona, 2020).

The costs associated with these technical aspects are high; this includes the high cost of connectivity fees and the particularly high cost of supplies and maintenance for equipment such as multi-functional machines, cartridges, and toner, which can be a severe problem, especially as subsidies are reduced (Gamage & Halpin, 2007).

Operational challenges:

Telecentres face significant operational challenges related to their management and funding that threaten their sustainability. A major hurdle is funding shortages, often stemming from a dependence on subsidies (Chege et al., 2019; Gamage & Halpin, 2007). In Sri Lanka, Nanasalas telecentres, rely heavily on subsidies for things like connectivity which are often phased out over time (Gamage & Halpin, 2007). Operators express concern that they will not be able to maintain current service rates once subsidies are reduced and generating sufficient income from limited-service use remains a challenge (ibid). Linked to funding are poor maintenance practices and the high costs associated with repairs and supplies (Kapondera & Hart, 2016)

Staffing issues also pose challenges to operate telecentres continuously, including a lack of trained personnel and poor attitudes (Kapondera & Hart, 2016; Lwoga & Chigona, 2020). Users have also reported a lack of support when trying to use the telecentre services (Kapondera & Hart, 2016). Furthermore, location problems can severely limit accessibility and usage. Telecentres are situated in extremely remote or inaccessible locations, or those with locations that conflict with local customs or are simply far from the village center, see reduced patronage (Morakanyane, 2010).

Socioeconomic and cultural challenges:

Furthermore, Telecentres face significant socioeconomic and cultural challenges that create barriers for potential users and limit their integration into community life. widespread poverty among target communities directly impacts telecentre usage. Even when services are

offered, the cost of access can be prohibitive for individuals with low incomes. For many poor individuals from Tanzania and Kenya, basic needs like food, take precedence, and they may not perceive visiting a telecentre as an appropriate or affordable use of their limited resources (Chege et al., 2019; Lwoga & Chigona, 2020). The financial disadvantage of rural communities means they often lack the money required to pay for information services (Chege et al., 2019). This underscores how socioeconomic status profoundly affects the ability of individuals to benefit from telecentre services.

Language barriers pose a significant challenge to the effective use of telecentres, particularly when the available information and training are not offered in the local language (Alao et al., 2021; Kapondera & Hart, 2016). For instance, a study in Malawi highlighted the lack of information in Nkhonde, the dominant local language, as a major obstacle, as most resources in the telecentre library were in English, the country's official language (Kapondera & Hart, 2016). To address this, telecentres need to adapt their services to meet the linguistic needs of their communities, ensuring training and content are available in local languages.

Gender disparities can influence who accesses and benefits from telecentre services. While some studies specifically examine the experiences of rural women and the potential for telecentres to expand their capabilities (Alao et al., 2022; Lwoga & Chigona, 2020), cultural barriers can restrict women's participation (Chege et al., 2019). Disparities in literacy rates between genders can also contribute to uneven access to telecentres (Kapondera & Hart, 2016).

Policy and systemic challenges:

Telecentres frequently encounter significant policy and systemic challenges that arise from external institutional barriers and a lack of integrated strategic planning. A central issue is the lack of healthy government integration and coordination. For example, the study done by Siddiquee and Faroqi (2021) stated that, Union Digital Centers (UDCs) in Bangladesh, while intended as government service hubs, currently offer only a limited selection of government services. Critical services on information related to agriculture, health, and education are often not available through UDCs. This situation is attributed to issues such as insufficient infrastructure, complex policy hurdles, constraints from existing bureaucratic structures, and a lack of cross-agency cooperation. Furthermore, bureaucratic delays pose a notable barrier. In Malawi, accessing support for telecentres can be slowed by local management committees being slow to approve requests when supplies are needed (Kapondera & Hart, 2016). These delays contribute to weaknesses in telecentre management, especially in government-owned centres, hindering the timely purchase or repair of equipment (ibid).

Overall, challenges such as technical, operational, socioeconomic, cultural, policy-related, and systemic issues hinder the successful operation of telecentres. However, the reviewed articles also discuss policy recommendations aimed at addressing these challenges and ensuring sustainable operation. The following section explores these policy recommendations for enhancing the sustainability of telecentres.

Recommendations for Enhancing the Sustainability of Telecentres

The empirical research papers reviewed have suggested recommendations on how telecentres can be operated in a sustainable manner. These recommendations can be categorized into five key areas: infrastructure and technical improvement, capacity building and training, community engagement and outreach, operational and management strategies.

Infrastructure & Technical Improvements:

Upgrading connectivity through investment in high-speed Internet is a crucial step toward enhancing telecentre effectiveness (Siddiquee & Faroqi, 2021). To address power-related challenges, telecentres can adopt alternative energy sources such as solar power, which can help mitigate the impact of blackouts (Kapondera & Hart, 2016; Lwoga & Chigona, 2020). Ensuring access to affordable hardware and developing localized content in native languages are also essential for increasing relevance and usability (Alao et al., 2021; Chege et al., 2019). In addition, telecentre management should collaborate with academic institutions and other stakeholders to create and disseminate localized content to address the current gaps (Gamage & Halpin, 2007; Morakanyane, 2010). Beyond infrastructure, the availability of technical expertise is vital. This can be achieved either by employing dedicated technicians or through capacity-building initiatives for existing staff (Hussain et al., 2009).

Addressing these infrastructural and technical aspects is crucial, as a study has shown that challenges such as unreliable Iinternet connectivity and power supply often hinder telecentre operations (Mtega & Malekani, 2009). These improvements not only resolve fundamental access issues but

also help ensure that technology and information are relevant, sustainable, and effectively integrated within the community.

Capacity Building & Training:

Capacity building and training play a pivotal role in ensuring the long-term sustainability of telecentres. Offering digital literacy programs that encompass both basic ICT skills and more advanced courses is essential for equipping users with the competencies needed to effectively utilize telecentre services (Kapondera & Hart, 2016; Lwoga & Chigona, 2020). These programs not only empower individuals but also drive consistent usage of telecentres, fostering community reliance on their services.

Telecentre sustainability is further reinforced through gender-sensitive ICT training initiatives, particularly those targeting rural women. By offering flexible and accessible training that aligns with women's daily responsibilities, telecentres can promote inclusive participation and expand their user base (Alao et al., 2021). Increased engagement from women enhances the center’s social impact and ensures broader community support, which is critical for long-term viability. In addition to user training, upskilling telecentre staff is crucial. Training in customer service, technical support, and ICT management improves service quality and operational efficiency (Kapondera & Hart, 2016). Well-trained staff can handle technical issues, support users more effectively, and contribute to the center’s reputation and trustworthiness—factors that are vital for retaining users and securing institutional or governmental support.

Community Engagement & Outreach:

Effective community engagement and targeted outreach are fundamental to the success and sustained use of telecentres. A significant challenge noted is the lack of awareness about telecentres and the services they offer (Siddiquee & Faroqi, 2021), coupled with misconceptions that these centers are only for educated people or those proficient in official languages (Morakanyane, 2010). Therefore, policy and practice should strongly emphasize strategies to raise awareness about the existence and benefits of telecentres (Alao et al., 2021; Gamage & Halpin, 2007).

Crucially, community engagement must be rooted in understanding and responding to the specific needs and priorities of the local community. Services offered should be relevant, useful, appropriate, and compatible with the community's needs, values, and beliefs. This requires conducting needs assessments (Kapondera & Hart, 2016; Lwoga & Chigona, 2020). Providing services and information in local languages is considered vital for promoting better understanding, full adoption, and comfortable use of telecentres, especially in areas where mastery of official languages is low (Gamage & Halpin, 2007). Regularly assessing community needs ensures that services remain relevant over time.

Beyond direct user interaction, effective outreach involves building networks and partnerships with various stakeholders. This includes collaboration with other organizations, such as government agencies, the private sector, civil society, and NGOs, to gain support, resources, and legitimacy (Chege et al., 2019; Morakanyane, 2010). Partnering with existing institutions like public libraries is highlighted as beneficial, as they are already engaged in community services and possess expertise in

information management, which can complement telecentres' offerings (Gamage & Halpin, 2007).

Operational and Management Strategies:

Ensuring the long-term viability of telecentres is a crucial aspect of their operation and management. Policy and management strategies should focus on finding ways for these centers to be sustainable, recognizing that they cannot rely solely on external funding and subsidies. It is essential to identify methods through which telecentres can generate the necessary income to sustain their operations. Collaboration with other stakeholder organizations, including those from the public, private, and non-governmental sectors, is recommended as a means of support (Morakanyane, 2010). Support programs involving various agencies can further aid in the effective functioning of telecentres. Leveraging existing infrastructure, such as establishing telecentres in public libraries, is seen as beneficial due to their community orientation and established network (Gamage & Halpin, 2007).

The strategic location of telecentres also plays a significant role in their viability and accessibility. Policy should consider placing centers in locations that are easily accessible to the community, ideally in neutral areas (Morakanyane, 2010). Challenges such as poor roads can limit access for communities that are geographically isolated (Chege et al., 2019). In many rural areas, telecentres often serve as the primary, or sometimes the only, venues through which people can access ICT services and information.

Developing and promoting necessary support systems and appropriate policies are essential for ensuring the telecentres to be

sustainable in the long term. This includes aiming for the long-term, sustainable provision of services, which might involve exploring entrepreneurial models for telecentre operations (Gamage & Halpin, 2007). Introducing aggressive income-generating activities is explicitly recommended for ensuring the long-term sustainability of telecentres (Chege et al., 2019).

Monitoring and evaluation are important aspects of telecentre management to ensure their effectiveness and sustainability. Conducting regular impact assessments is recommended. Research suggests that analyzing the performance and impacts of telecentres is necessary to understand their contributions (Hussain et al., 2009). Evaluating the long-term sustainability of telecentres is frequently cited as a key objective for studies in this field.

Overall, enhancing the sustainability of telecentres in rural communities requires an integrated policy approach that addresses infrastructure, technical capacity, human resource development, community engagement, and operational management. The reviewed empirical literature underscores that merely providing access to ICT is insufficient; sustainability depends on continuous investment in connectivity, localized content, and skilled personnel. Equally important is fostering community trust and relevance through targeted outreach, gender-inclusive programs, and partnerships with key stakeholders. Strategic location planning, ongoing monitoring and evaluation further strengthen telecentre resilience. Collectively, these recommendations emphasize that sustainable telecentres are not just technology hubs—they

are dynamic community institutions that require thoughtful, context-specific planning and support to thrive in the long term.

Conclusion

This narrative review has synthesized existing empirical literature to assess the role of telecentres in bridging the digital divide in rural communities of developing countries. The findings affirm that telecentres play a vital role in addressing both the first-level digital divide by providing physical access to ICT infrastructure and the second-level divide by fostering digital literacy and meaningful use of digital tools. Through these services, telecentres act as important vehicles for promoting digital inclusion and enhancing the socio-economic well-being of rural population. However, despite their potential, telecentres face significant challenges that threaten their long-term sustainability. These include technical issues such as unreliable electricity and poor Internet connectivity; operational barriers like inadequate funding, poor maintenance, and untrained staff; as well as socio-cultural and policy-related obstacles that hinder effective usage and integration.

To address these issues, the reviewed studies offer a range of context-specific recommendations, including improvements in infrastructure, capacity-building initiatives, inclusive outreach strategies, and sustainable operational models. Emphasizing local language content, gender-sensitive programming, and partnerships with stakeholders such as libraries and NGOs is essential to increasing the relevance and reach of telecentre services. Ultimately, sustainable telecentres are not just technological access points but community-centric institutions that require holistic, inclusive, and coordinated approaches. By implementing the

identified strategies, policymakers and practitioners can enhance the effectiveness and longevity of telecentres, ensuring they serve as resilient pillars of digital empowerment for underserved rural communities.

This study is subject to several limitations. First, it focuses solely on the first- and second-level digital divides, omitting analysis of the third-level digital divide, which concerns the actual offline outcomes and benefits of digital engagement. Second, the review was limited to only eight empirical studies, which may restrict the generalizability of the findings. Third, the literature search was confined to two major databases namely, Scopus and Web of Science, potentially overlooking relevant studies published elsewhere, especially in grey literature or region-specific sources. Fourth, the study concentrates solely on rural communities in developing countries, thereby excluding other marginalized groups such as residents of informal urban settlements, older adults, refugees, indigenous populations, and ethnic minorities, who may also face significant digital exclusion.

Future research should expand upon this work by exploring how telecentres influence the third-level digital divide. Specifically, studies should examine whether telecentre use translates into tangible improvements in areas such as education, employment, income generation, health, civic participation, and overall quality of life. Moreover, future reviews should incorporate a broader range of databases and include grey literature to ensure a more comprehensive understanding of telecentre impacts. Longitudinal research designs would provide deeper insight into the long-term impacts and sustainability of telecentres. Expanding the

focus to include other underserved populations will be crucial for informing inclusive and context-sensitive digital inclusion policies.

Reference

Alao, A., Chigona, W., & Brink, R. (2021). Telecentres' contribution to women's empowerment in rural areas of South Africa. *Information Technology for Development*, *28*(4), 747–776. https://doi.org/10.1080/02681102.2021.1991871

Attewell, P. (2001). Comment: The First and Second Digital Divides. *Sociology of Education*, *74*(3), 252–259. https://doi.org/10.2307/2673277

Bezu, S. (2021). Rural development: The significance of agriculture and non-farm economy. In *Handbook of Development Policy* (pp. 182–191). Edward Elgar Publishing

Chantada, G. L., Luna-Fineman, S., Qaddoumi, I., Furmanchuk, A., & Wilimas, J. (2010). Retinoblastoma in developing countries. In C. Rodriguez-Galindo & M. Wilson (Eds.), *Retinoblastoma* (pp. 133–141). Springer. https://doi.org/10.1007/978-0-387-89072-2_11

Chege, C. W., Kiplang'at, J., & Rotich, D. C. (2019). Information services provided by Maarifa Telecentres to rural communities in ASALs in Kenya. *Inkanyiso: Journal of Humanities and Social Sciences*, *11*(1), 50–68. https://www.researchgate.net/publication/339457314

Dawood, S. R. S., Ghazali, S., & Samat, N. (2019). Digital divide and poverty eradication in the rural region of the northern Peninsular Malaysia. *Indonesian Journal of Geography*, *51*(2), 172–182. https://doi.org/10.22146/ijg.37758

Faroqi, M. G., Siddiquee, N. A., & Ullah, S. (2019). Sustainability of telecentres in developing countries: Lessons from Union Digital Centre in Bangladesh. *Telematics and Informatics, 37*, 113–127. https://doi.org/10.1016/j.tele.2018.12.004

Furuholt, B., & Sæbø, Ø. (2018). The role telecentres play in providing e-government services in rural areas: A longitudinal study of Internet access and e-government services in Tanzania. *Electronic Journal of Information Systems in Developing Countries*, *84*(1). https://doi.org/10.1002/isd2.12006

Gamage, P., & Halpin, E. F. (2007). E-Sri Lanka: Bridging the digital divide. *Electronic Library*, *25*(6), 693–710. https://doi.org/10.1108/02640470710837128

Green, B. N., Johnson, C. D., & Adams, A. (2006). Writing narrative literature reviews for peer-reviewed journals: Secrets of the trade. *Journal of Chiropractic Medicine*, *5*(3), 101–117. doi:10.1016/S0899-3467(07)60142-6

Harris, R. (2001). Telecentres in rural Asia: Towards a success model. In *Proceedings of the International Conference on Information Technology, Communications and Development (ITCD 2001)* (pp. 71–111). Kathmandu, Nepal.

Helsper, E. J., & Reisdorf, B. C. (2017). The emergence of a "digital underclass" in Great Britain and Sweden: Changing reasons for digital exclusion. *New Media and Society*, *19*(8), 1253–1270. https://doi.org/10.1177/1461444816634676

Helsper, E. J., van Deursen, A. J. A. M., & Eynon, R. (2015). *Tangible outcomes of internet use: From digital skills to tangible outcomes* [Project report]. Oxford Internet Institute & Oxford University Press. http://www.oii.ox.ac.uk/research/projects/?id=112

Hussain, S., Razak, N. A., & Nor, N. F. M. (2009). *Planning and implementation of educational programs at e-community centers in a rural area in Malaysia*. In *Proceedings of the 8th WSEAS International Conference on E-Activities and Information Security and Privacy (E-ACTIVITIES'09/ISP'09)* (pp. 248–251). WSEAS.

Ibrahim, Z., & Ainin, S. (2009). The influence of Malaysian telecenters on community building. *Electronic Journal of e-Government, 7*(1), 77–86. http://www.ejeg.com

Islam, M. A., & Tsuji, K. (2011). Bridging digital divide in Bangladesh: Study on community information centers. *The Electronic Library, 29*(5), 582–595. https://doi.org/10.1108/02640471111156768

Kapondera, S. K., & Hart, G. (2016). The use of multipurpose community telecentres and their services in Malawi: The case of Lupaso Community Telecentre. *South African Journal of Libraries and Information Scienc*e, *82*(1), 13–25. https://doi.org/10.7553/82-1-1589

Lwoga, E. T., & Chigona, W. (2020). Telecenters and the expansion of human capabilities among rural women. *Global Knowledge, Memory and Communication*, *69*(6–7), 501–520. https://doi.org/10.1108/GKMC-11-2019-0136

Morakanyane, R. (2010). *Bridging the digital divide through community user information systems: Kitsong Centres* (pp. 1–10). In P. Cunningham & M. Cunningham (Eds.), *IST-Africa 2010 conference proceedings*. IIMC International Information Management Corporation.

Mtega, W., & Malekani, A. (2009). Analyzing the usage patterns and challenges of telecenters among rural communities : experience from four selected telecenters in Tanzania. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT), 5*(2), 68–87.

Muñoz, J. A., & Cardona Valencia, D. (2023). Trends and challenges of digital divide and digital inclusion: A bibliometric analysis. *Journal of Information Science*, 1-18. https://doi.org/10.1177/01655515221148366

National Telecommunications and Information Administration. (1995, July). *Falling through the net: A survey of the "have nots" in rural and urban America*. U.S. Department of Commerce. https://www.ntia.gov/page/falling-through-net-survey-have-nots-rural-and-urban-america

National Telecommunications and Information Administration. (1998, July). *Falling through the net II: New data on the digital divide*. U.S. Department of Commerce. https://ntia.gov/report/1998/falling-through-net-ii-new-data-digital-divide

National Telecommunications and Information Administration. (1999). *Falling through the net: Defining the digital divide*. U.S. Department of Commerce. https://www.ntia.doc.gov/legacy/ntiahome/fttn99/FTTN.pdf

Noor, M. M. (2021). A Sustainable Rural Telecentre Concept on Sustainability Pillars. *Journal of Sustainable Development*, *14*(6), 42. https://doi.org/10.5539/jsd.v14n6p42

Organization for Economic Co-operation and Development (OECD). (2001). *Understanding the digital divide*. https://www.oecd.org/sti/1888451.pdf

Oestmann, S., & Dymond, A. C. (2001). Telecentres — Experiences, lessons and trends. In C. Latchem & D. Walker (Eds.), *Telecentres: Case studies and key issues* (pp. 1–16). The Commonwealth of Learning.

Pranckutė, R. (2021). Web of Science (WoS) and Scopus: the titans of bibliographic information in today's academic world. *Publications*, 9(1). https://doi.org/10.3390/publications9010012

Ragnedda, M. (2017). *The Third Digital Divide: A Weberian Approach to Digital Inequalities*. Routledge. https://doi.org/10.4324/9781315606002

Ragnedda, M., Ruiu, M. L., & Addeo, F. (2022). The self-reinforcing effect of digital and social exclusion: The inequality loop. *Telematics and Informatics*, *72*, 1–13. https://doi.org/10.1016/j.tele.2022.101852

Robinson, L., Schulz, J., Dodel, M., Correa, T., Villanueva-Mansilla, E., Leal, S., Magallanes-Blanco, C., Rodriguez-Medina, L., Dunn, H. S., Levine, L., McMahon, R., & Khilnani, A. (2020). Digital inclusion across the Americas and the Caribbean. *Social Inclusion*, *8*(2), 244–259. https://doi.org/10.17645/si.v8i2.2632

Scheerder, A., van Deursen, A., & van Dijk, J. (2017). Determinants of Internet skills, uses and outcomes. A systematic review of the second- and third-level digital divide. *Telematics and Informatics*, *34*(8), 1607–1624. https://doi.org/10.1016/j.tele.2017.07.007

Siddiquee, N. A., & Faroqi, M. G. (2021). The magic bullet for rural development ? Exploring the impacts of community telecenters in Bangladesh. *Information Development*, *38*(2), 1–18. https://doi.org/10.1177/0266666921997508

Food and Agriculture Organization of the United Nations (FAO) & Organisation for Economic Co-operation and Development (OECD). (2007). *Handbook on rural households' livelihood and well-being: Statistics on rural development and agriculture household income*. United Nations. https://openknowledge.fao.org/server/api/core/bitstreams/a7318167-988d-4c7b-b20c-dd7e8493f0af/content

Van Deursen, A. J. A. M., & Van Dijk, J. A. G. M. (2014). The digital divide shifts to differences in usage. *New Media and Society*, *16*(3), 507–526. https://doi.org/10.1177/1461444813487959

Van Dijk, J.A.G.M. (2020a). *The digital divide*. Polity Press

Van Dijk, J. A. G. M. (2020b, August). Closing the digital divide: The role of digital technologies on social development, well-being of all and the approach of the COVID-19 pandemic [Conference presentation]. Virtual Expert Group Meeting "Socially just transition towards sustainable development: The role of digital technologies on social development and well-being of all," New York, NY, United Nations. https://www.un.org/development/desa/dspd/wp-content/uploads/sites/22/2020/07/Closing-the-Digital-Divide-by-Jan-A.G.M-van-Dijk-.pdf

Van Dijk, J. A. G. M. (2006). Digital divide research, achievements and short comings. *Poetics*, *34*(4–5), 221–235. https://doi.org/10.1016/J.POETIC.2006.05.004

Watat, J. K., & Jonathan, G. M. (2020). Breaking the digital divide in rural Africa (pp. 1–10). *In Proceedings of the 26th Americas Conference on Information Systems (AMCIS 2020).* AIS Electronic Library (AISeL). https://aisel.aisnet.org/amcis2020/global_dev/global_dev/2