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Assessing Symbiosis between Traditional and Virtual Reference Service: An Empirical Study Based On Librarians' Perception

Abstract

The present study aims to gauge the perceptions of working library professionals toward the significance of Virtual Reference Service (VRS) vis-à-vis Traditional Reference Service (TRS). The study is based on sample drawn from members of the CRIKC libraries. The study sample was collected by conducting a questionnaire method and the analysis of the data was done quantitatively with the help of both descriptive statistics and inferential statistics using the software IBM SPSS. VRS was not being offered by almost all the CRIKC libraries and Synchronous VRS (SVRS) was offered by none of them. Around 50% librarians believed that '*quick/ready reference questions*', '*detailed research questions*' as well as '*directional questions*' can better be handled by Virtual Reference Service (VRS) than TRS. However, 52.6% of the librarians feel TRS would be a more effective method while providing '*reader's advisory questions*'. According to 42.1% librarians TRS considered more effective over VRS while dealing with procedural questions. As per the responses received it was found that '*email*' was considered as the most viable tool for providing asynchronous VRS ($\mu=4.0$, R=1) followed by '*web form*' ($\mu=3.3$, R=2) and '*SMS*' ($\mu=2.7$, R=3). While in case of synchronous VRS '*instant messaging*' (IM) and '*mobile app*' were considered equally effective ($\mu=3.6$ and R1) followed by '*Web chat*' ($\mu=2.6$, R3). None of the librarians has given highest preference to '*video conferencing*' as a medium of synchronous VRS.

Keywords: Traditional Reference Service (TRS), Virtual Reference Service (VRS).

Introduction:

Reference Service enables libraries serve their patrons in accessing, locating, finding and using information which she or he is looking for through personal assistance. While doing so, reference librarians are also educating them to become an independent information seeker which is must for lifelong learning. Traditionally reference service was offered to walk-in patrons. With the emergence of new users' information seeking behaviour (ISB) along with

their expectations from the reference service has changed. To attend to their new ISB, librarians need to embrace the new tools and technologies to remain relevant facilitating information exchange, communication, and instruction. Reference service now include both synchronous and asynchronous approaches in order to meet the diversified demands transforming the in-person desk-based Traditional Reference Service (TRS) to Virtual Reference Service (VRS). This paper examines the position of VRS from the eye of VRS in comparison to time-tested and well established TRS. To investigate this research problem, the perception, belief, attitude of librarians serving in CRIKC libraries has been obtained and further processed in suitable software.

Review of Related Literature:

Lauer and McKinzie (2002) in their article entitled “Bad Moon Rising: A Candid Examination of Digital Reference and What It Means to the Profession” overestimated the profound impact of the digital reference claimed by its proponents. Librarians tend to overestimate technology, assume its intrinsic value in improving library operations and services, and underestimated the human factor of librarian expertise and professional skills. Overstated the impact of library trends was a cyclically recurring phenomenon and a current example was the hype surrounding digital reference. The adoption of digital reference was not unlikely to be cost-effective in most libraries, nor was it useful to improve existing structures and work well. Librarians had difficult resource allocation decisions to make. The superiority of traditional reference approaches should not be overlooked by misdirected digital reference emphasis.

Zanin-Yost (2004) in his theoretical paper entitled “Digital Reference: What the Past Has Taught Us and What the Future Will Hold” discussed the evolution of DRS, working of DRS, related issues and implications for users in academic libraries in the U.S. The author believed that adoption of new technologies brings new opportunities as-well-as challenges. However, this would not impact the core value or foundations and philosophy of reference service. Zanin argued that “reference librarians will continue need to reach out to patrons and help them find and use information.” He suggested that “librarians should embrace this challenge and seek out new and improved methods to provide reference service.” While

visualizing the future potential of VRS, the author concluded that “Internet had changed the services of libraries by helping to reach out to the people who otherwise would never visit the library.”

Khan and Khan (2014) discussed the difference between traditional library reference service and digital reference service in their work "Implementation of Digital Reference Services in Pakistani Libraries: A Descriptive and Critical Annotated Bibliographic Guide." They opined that “a digital reference service, unlike the traditional library reference service, allows users to submit questions and receive responses via the Internet and other electronic communication methods.” In this paper, the authors discussed the history of DRS, explained various forms of DRS/VRS and/or media. Also discussed the concept and issues related to the use of digital reference in academic libraries. The authors explained the working of VRS along with its implications for users and libraries and speculated on its future.

Shakeri, Akbaridaryan and Mohammadi (2012) in their research article “Comparison of Traditional and Digital Reference Questions and Responses at the National Library and Archives” aimed to evaluate the characteristics of reference services users and their information needs to know how to improve these types of services at the NLAI qualitatively and quantitatively. Findings from this study indicated that the most frequently asked questions were ready reference questions (33.55 percent) at the NLAI's reference desks and that the least common questions were research-based (17.34 percent). Females (65.53 percent) used traditional reference service, but males (54.55 percent) used more virtual reference service. The analysis also showed that the most common and least common types of questions were ready for reference at the traditional reference desk (42.42 per question) and research questions (6.89 percent) respectively and the virtual reference questions (32.28 percent) and the directory questions (20.08 percent). Most of the questions posed by customers of both traditional and virtual reference services could be classified in computer science, information, and general works (000) (30.58 percent) while the fewest questions were grouped in philosophy and psychology (100) (1.18 percent).

Study Scope and Research Objective:

The present study endeavours to investigate the perception and beliefs of library professionals that are serving in CRIKC member libraries regarding traditional and virtual reference service. The specific objective of the study is to investigate the librarians' perception towards traditional and virtual reference service (TRS and VRS).

The scope of the study comprises various facets pertaining to virtual reference service (VRS) and current status of reference service in CRIKC (Chandigarh Region Innovation & Knowledge Cluster) institutions. CRIKC was established on 24th November 2012 and constituted as a cluster of Chandigarh region institutions to promote and sustain excellence in research. CRIKC aims to foster and sustain close academic alliances between institutions of higher education and research in the Chandigarh region. It aims to facilitate innovation and knowledge creation and for achieving excellence in all academic spheres without compromising in any manner the autonomy of the participating institutions. The Table below presents the list of CRIKC member institutions:

Table 1: CRIKC member institutions

SN	Institution	Place
1.	Panjab University (PU)	Chandigarh
2.	Postgraduate Institute of Medical Education & Research (PGIMER)	Chandigarh
3.	PEC University of Technology	Chandigarh
4.	Indian Institute of Science Education & Research (IISER)	Mohali Punjab
5.	Indian Institute of Technology Ropar (IIT Ropar)	Rupnagar Punjab
6.	Institute of Microbial Technology (IMTECH)	Chandigarh

7.	National Institute of Pharmaceutical Education and Research (NIPER)	Mohali Punjab
8.	CSIR-Central Scientific Instruments Organization (CSIR-CSIO)	Chandigarh
9.	Institute of Nano Science and Technology (INST)	Mohali, Punjab
10.	Indian School of Business (ISB)	Mohali, Punjab
11.	National Agri-Food Biotechnology Institute (NABI)	Mohali, Punjab
12.	Center of Innovative and Applied Bioprocessing (CIAB) http://www.ciab.res.in/	Mohali, Punjab
13.	National Institute of Technical Teachers Training & Research (NITTR) http://www.nitttrchd.ac.in/sitenew1/	Chandigarh
14.	Terminal Ballistics Research Laboratory (TBRL) Defense Research and Development Organization (DRDO), http://www.drdo.gov.in/drdo/labs/TBRL/English/index.jsp?pg=homebody.jsp	Chandigarh
15.	Snow & Avalanche Study Establishment (SASE) Defense Research and Development Organization (DRDO). http://www.drdo.gov.in/drdo/labs/SASE/English/index.jsp?pg=homebody.jsp	Chandigarh
16.	Government Medical College & Hospital (GMCH) http://gmch.gov.in/	Chandigarh
17.	Chandigarh College Of Engineering & Technology	Chandigarh

	(CCET) http://www.ccet.ac.in/	
18.	Punjab State Council for Science & Technology (PSCST) http://pscst.gov.in/Default.aspx?pagesPSCST=home&mainMenu=Home	Chandigarh
19.	Centre for Development of Advanced Computing (C-DAC) http://www.cdac.in/	Mohali
20.	Defense Institute of High Altitude Research (DIHAR) Defense Research and Development Organization (DRDO) http://www.drdo.gov.in/drdo/labs/DIHAR/English/index.jsp?pg=HistoricalBG.jsp	Chandigarh
21.	Semi-Conductor Laboratory (SCL) http://www.scl.gov.in/	Mohali, Punjab
22.	Institute of Development and Communication (IDC) http://www.idcindia.org/	Chandigarh
23.	Centre for Research in Rural and Industrial Development (CRRID) http://www.crrid.res.in/	Chandigarh
24.	Rayat-Bahara University http://www.rayatbahra.com/	Mohali, Punjab
25.	Chitkara University http://www.chitkara.edu.in/	Punjab
26.	Maharaja Agrasen University http://www.mau.ac.in	Solan H.P
27.	Indona Innovative Solutions. http://www.indinsols.com	Dinanagar, Punjab
28.	Swami Vivekanand Group of Institutes http://www.sviet.ac.in	Banur, Chandigarh

29.	National Institute of Electronics http://www.nielit.gov.in	Mohali Punjab
30.	Punjabi University, Patiala http://www.punjabiuniversity.ac.in	Patiala Punjab
31.	Desh Bhagat University http://deshbhagatuniversity.in/	Mandi Gobindgarh Punjab

Universe of the study and Sampling:

The universe consists of all survey elements that qualify for inclusion in the research study. The universe may be individuals, groups of people, organizations, or even objects. In the present study, the universe of the study comprises libraries of select member institutions of Chandigarh Region Innovation & Knowledge Cluster (CRIKC). At the initial stages of my study, there were 20 members of CRIKC. Later, as of June 2019, the number rose to 29 with new members joining the cluster. The population of the present study comprises librarians of select CRIKC institutions. The present study focused on ascertaining the current status of VRS, the reason for not providing VRS and feasibility of VRS.

Table 2: Select CRIKC member institutions under study

SN	Institution	Place
1.	Panjab University (PU) http://pu.ac.in/	Chandigarh
2.	Postgraduate Institute of Medical Education & Research (PGIMER) http://pgimer.edu.in/PGIMER_PORTAL/PGIMERPORTAL/home.jsp	Chandigarh
3.	PEC University of Technology http://pec.ac.in/~pecac/new/	Chandigarh

4.	Indian Institute of Science Education & Research (IISER) http://www.iisermohali.ac.in/	Mohali Punjab
5.	Indian Institute of Technology Ropar (IIT Ropar) http://www.iitrpr.ac.in/	Rupnagar Punjab
6.	Institute of Microbial Technology (IMTECH) http://www.imtech.res.in/index.php?option=com_content&view=frontpage&Itemid=1	Chandigarh
7.	National Institute of Pharmaceutical Education and Research (NIPER) http://www.niper.ac.in/	Mohali Punjab
8.	CSIR-Central Scientific Instruments Organization (CSIR-CSIO) http://www.csio.res.in/	Chandigarh
9.	Indian School of Business (ISB) http://www.isb.edu/pgp/campuses/Mohali	Mohali, Punjab
10.	National Agri-Food Biotechnology Institute (NABI) http://www.nabi.res.in/	Mohali, Punjab
11.	National Institute of Technical Teachers Training & Research (NITTR) http://www.nitttrchd.ac.in/sitenew1/	Chandigarh
12.	Terminal Ballistics Research Laboratory (TBRL) Defense Research and Development Organization (DRDO), http://www.drdo.gov.in/drdo/labs/TBRL/English/index.jsp?pg=homebody.jsp	Chandigarh
13.	Government Medical College & Hospital (GMCH) http://gmch.gov.in/	Chandigarh
14.	Chandigarh College Of Engineering & Technology (CCET) http://www.ccet.ac.in/	Chandigarh
15.	Punjab State Council for Science & Technology (PSCST) http://pscst.gov.in/Default.aspx?pagesPSCST=home&mainM	Chandigarh

	enu=Home	
16.	Centre for Development of Advanced Computing (C-DAC) http://www.cdac.in/	Mohali
17.	Institute of Development and Communication (IDC) http://www.idcindia.org/	Chandigarh
18.	Centre for Research in Rural and Industrial Development (CRRID) http://www.crrid.res.in/	Chandigarh
19.	Punjabi University, Patiala http://www.punjabiuniversity.ac.in	Patiala Punjab

Research Methodology:

The research problem investigated by the study was the culmination of several factors including the absence of actual VRS implementation in Indian libraries, especially SVRS, the research gap concerning library professionals' point of view & technological possibilities. The research questions of the present study composed of aspects including the current status of reference service, librarians' perceptions pertaining to the feasibility of Virtual Reference Service (VRS), reasons for not initiating VRS in CRICK libraries and ICT infrastructure vis-à-vis VRS.

To gather data for addressing these issues, the quantitative method was found to be appropriate as it facilitates measuring, ranking, categorizing, identifying patterns and making generalizations. The survey method of research was adopted to conduct the study. To conduct the survey, questionnaire method was employed to collect data from librarian/reference librarian/library professionals from the libraries of the select CRIKC institutions. To supplement information the interview method was also employed to collect data as and whenever required. A questionnaire was prepared for library professionals with a view to understand, describe, interpret, contextualize, and gain in-depth insight pertaining to the research problem and research questions/objectives of the present study from their perspective. Out of 20 CRIKC member institutions (initial phase of data collection), only 19

had well established libraries equipped with library staff except Institute of Nano Science and Technology (INST). Thus, the questionnaire was administered amongst the library professionals of 19 CRIKC institutions. Data pertaining to the library profile, library collection, etc. were collected from the library websites of the select CRIKC libraries. The Web OPACs were also consulted for the cross-verification of relevant data obtained from the respondents. Library annual reports, wherever available, helped in capturing a few data points. The data was then analyzed using statistical software IBM SPSS.

Data analysis and interpretation

Data analysis and interpretation holds a crucial position in the research process. After collection of data with the help of relevant tools and techniques, the next logical step is to analyze and interpret data with a view to arriving at an empirical solution to the problem. The chapter attempts to achieve the objectives as stated earlier to draw relevant conclusions. It deals with detailed analysis and interpretation of data, collected through questionnaire and other means. The data analysis for the present research was done quantitatively with the help of both descriptive statistics and inferential statistics using the software IBM SPSS. The descriptive statistical techniques like mean, standard deviation and for the inferential statistics The Kruskal-Wallis H-test sometimes also called the "One-way analysis of variance (ANOVA) and Chi-square test have been used.

Results and Discussion:

Librarians' perception regarding VRS

Table 1: Perception regarding various types of reference service

	Traditional reference Desk n(%)	VRS n(%)	No Impact n(%)	Total
Quick/Ready reference questions	4 (21.1)	10 (52.6)	5 (26.3)	19 (100)
Detailed, research questions	6	8	5	19

	(31.6)	(42.1)	(26.3)	(100)
Reader's advisory questions	10 (52.6)	4 (21.1)	5 (26.3)	19 (100)
Directional questions	7 (36.8)	8 (42.1)	4 (21.1)	19 (100)
Procedural questions	8 (42.1)	7 (36.8)	4 (21.1)	19 (100)

Table above depicts librarians' perception regarding the preference of Traditional Reference Service (TRS) over Virtual Reference Service (VRS) and vice versa. It indicates that more than 50% librarians pointed out that '*quick/ready reference questions*' can be better handled by Virtual Reference Service (VRS) than TRS. As per the librarians of 42.1% (8) CRIKC institutional libraries, '*detailed research questions*' as well as '*directional questions*' are more effectively answered through VRS than TRS. However, in the case of '*readers advisory questions*' librarians of 52.6% (10) institutions opined that TRS would be a more effective method than VRS. As per the perception of 42.1% (8) librarians TRS considered more effective over VRS while dealing with procedural questions.

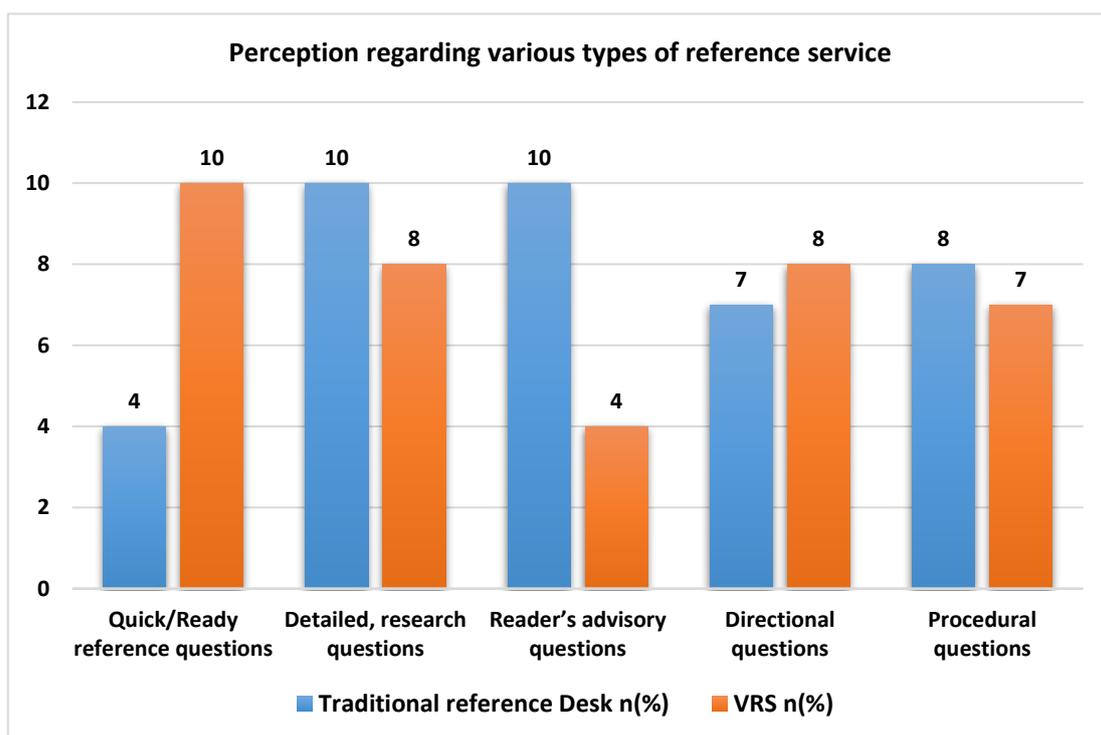


Figure 1: Perception regarding various types of reference service

As per librarians' perception, Quick/Ready reference service, as well as Long Range reference service along with research questions, could be managed more effectively and efficiently through VRS than it could be provided through traditional reference desk. This perception comes along with the belief that VRS can play a major role and add value to the existing reference Service model.

Table 2: Suitability of VRS formats regarding answering different types of reference questions

VRS Formats	Lowest Degree	Preference				Highest Degree	Total	Mean	Rank
	1	2	3	4	5				
Asynchronous VRS									
E-mail reference	3 (15.8)	0 (0)	0 (0)	4 (21.1)	12 (63.2)	19 (100)	4.0	R1	
Web form	6 (31.6)	1 (5.3)	3 (15.8)	4 (21.1)	5 (26.3)	19 (100)	3.3	R2	

Short Messaging Service (SMS)	6 (31.6)	0 (0)	5 (26.3)	3 (15.8)	5 (26.3)	19 (100)	2.7	R3
Synchronous VRS								
Web chat	9 (47.4)	1 (5.3)	4 (21.1)	5 (26.3)	0 (0)	19 (100)	2.6	R3
Instant Messaging (IM)	5 (26.3)	2 (10.5)	4 (21.1)	4 (21.1)	4 (21.1)	19 (100)	3.6	R1
Mobile App	7 (36.8)	2 (10.5)	3 (15.8)	4 (21.1)	3 (15.8)	19 (100)	3.6	R1
Voice over Internet Protocol (VoIP) like Skype	14 (73.7)	0 (0)	2 (10.5)	3 (15.8)	0 (0)	19 (100)	0.9	R5
Video-conferencing	13 (68.4)	1 (5.3)	3 (15.8)	2 (10.5)	0 (0)	19 (100)	2.3	R4

The table above reflects the perception of librarians regarding the suitability of VRS categories towards handling different types of reference queries. As per the responses received it was found that ‘*email*’ was the most viable tool for providing asynchronous VRS ($\mu=4.0$, $R=1$) as 63.2% believed it as a highly suitable channel for providing VRS. ‘*webform*’ was the second most preferred mode as perceived by 47.4% librarians with mean score 3.3 and ‘*SMS*’ was the least preferred Asynchronous mode with mean score 2.7 (R3). While in case of synchronous VRS ‘*instant messaging*’ (IM) (42.2%) and ‘*mobile app*’ (36.9%) were considered equally effective ($\mu=3.6$ and R1) as per the perception of librarians. ‘*webchat*’ (26.3%) considered as the second most effective tool ($\mu=2.6$, R3). None of the librarians has given highest preference to ‘*video conferencing*’ as a medium of synchronous VRS. As perceived by the librarians, ‘*VOIP*’ did not consider as a suitable tool.

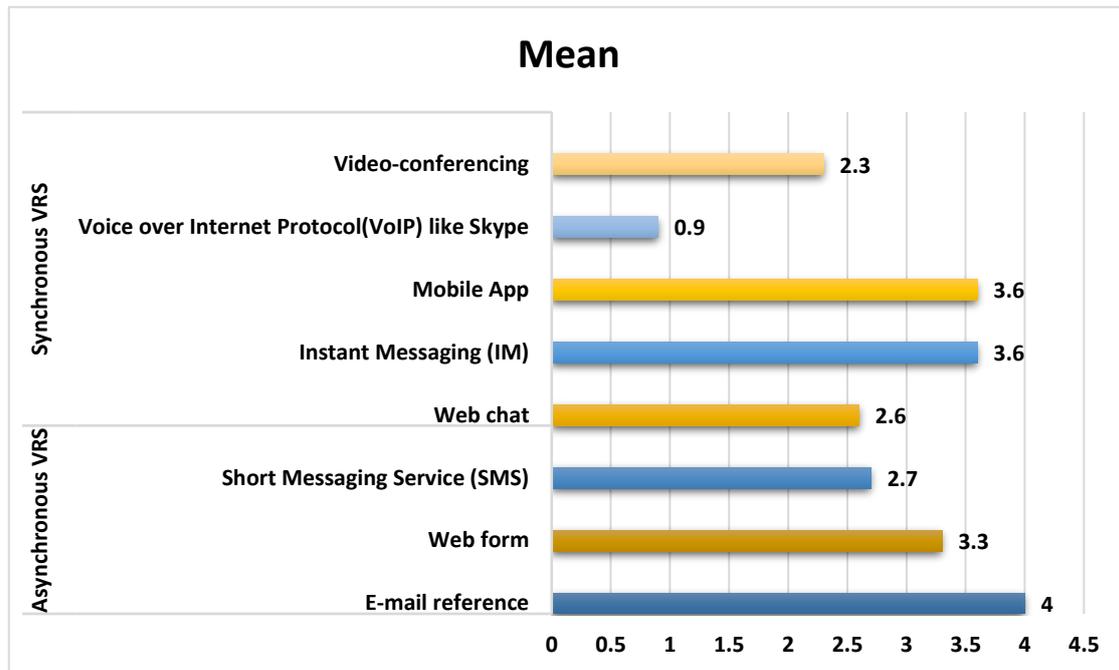


Figure 2: Suitability of VRS formats regarding answering different types of reference questions

In the asynchronous mode of VRS, the information seeker gets the answer to his or her queries at a later stage with some time gap as the reference librarian may not respond instantly. The email was to be the most preferred method for Asynchronous VRS (as per the perception of the librarians). In the synchronous mode of VRS, the communication (query response) occurs in real-time without any time lag. Librarians of the CRIKC Institutions perceived IM as the most appropriate method for synchronous VRS. It is pertinent to mention that why library use official email ID for Email-based reference service (asynchronous), IM still remains a personal means of communication unless a professional VRS solution is used with an additional feature of IM. Also, none of the CRIKC libraries had their mobile app. Still, libraries believe that mobile apps are useful when it comes to providing synchronous VRS. VoIP and video conferencing which facilitates synchronous communications had not been perceived as appropriate tools of VRS. This can be attributed to the fact that they require dedicated space and library professionals apart from the requirement of high-speed Internet connectivity for high-quality voice and video communications. Chat-based VRS via the embedded chat widget on the library website homepage, the most popular synchronous VRS method amongst the library's world over offering VRS had been appreciated by only 5, out of 19 librarians of the

CRIKC libraries with 4 being neutral and 10 considering it be less effective/ suitable than IM and mobile app. The Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) are reflected in the various modes of VRS.

Hypothesis:

H₀. There exists no significant difference in librarians' perceptions pertaining to traditional and virtual reference service (TRS and VRS).

Table 6.1 Perception regarding various types of reference service

	Traditional reference Desk n (%)	VRS n (%)	No Impact n (%)	Total	Chi-square value	df	p-value
Quick/Ready Reference questions	4 (21.1)	10 (52.6)	5 (26.3)	19 (100)	3.26	2	0.20
Detailed, research questions	6 (31.6)	8 (42.1)	5 (26.3)	19 (100)	0.74	2	0.69
Reader's advisory questions	10 (52.6)	4 (21.1)	5 (26.3)	19 (100)	3.26	2	0.20
Directional questions	7 (36.8)	8 (42.1)	4 (21.1)	19 (100)	1.37	2	0.50
Procedural questions	8 (42.1)	7 (36.8)	4 (21.1)	19 (100)	1.37	2	0.50

The results of the Chi-Square test reveal that for librarians' perception pertaining to traditional and virtual reference service, the calculated p-values are greater than the significance level (α) i.e., $p > 0.01$.

Therefore, the study fails to reject the null hypothesis (H₀). It may be concluded that not enough evidence is available to suggest the null is false at the 95% confidence level. Thus, it is inferred that there exists no significant difference (or a statistically significant relationship

exists) librarians' perception towards traditional and virtual reference service.

It can be inferred from the above test results that, librarians perceived virtual reference service (VRS) as important and beneficial as existing traditional reference service (TRS). This perception of librarians is somewhat obvious as librarians/libraries have already applied technology successfully in many services areas which were earlier carried out manually like automation, digital library, etc.

Conclusion: Librarians understand the utility of the tools and mechanisms to connect with the users overcoming the usual constraints of user-geolocation and library opening hours. These findings ascertain and reinforce the fact that VRS is not a replacement of TRS but a highly valuable extension and augmentation of it in terms of speed, availability, flexibility, convenience, and scope. Libraries adopting VRS will be able to provide their users with a rich experience through its demonstrative, illustrative, informative and instructive features.

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