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Establishment of an Integrated Service Quality Index for University Libraries in Sri Lanka

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Abstract

Measuring service quality has gained an immense interest in service organizations with no exception for academic libraries. Due to its complexity in definitions and variability of dimensions, the measuring of service quality in university libraries has become much more complicated. Although there are many powerful service quality measuring tools such as LibQUAL, SERVQUAL, SERVPERF, debates, and criticisms over existing service quality measuring tools argue that they are still unable to fully address the important dimensions of service quality because their approaches are one-sided: service provider focus or customer focus. For a fact, existing tools have ignored the contribution of resources capability dimension to the service quality. In this scenario, the benchmarking strategies to measure the quality becomes questionable in developing country environments. Many arguments show that the library service quality measure should follow a multidimensional procedure rather than the measuring of customer satisfaction. Especially the quality measures should be incorporated with the strategic utilization of resources and capabilities. This paper seeks the possibility of measuring the integrated service quality in university libraries through a multidimensional approach associated with both resource-capability measures and the perceived service quality by librarians (service providers) as well as service users. This conceptualization also leads to the proposed Integrated Service Quality Index for university libraries of Sri Lanka. The proposed conceptual model contains five key variables viz. competitive capabilities, dynamic capabilities, agility capabilities, provider-perceived quality, and user-perceived quality which are measured through five different questionnaires. The model was empirically tested with a sample of 2247 users and 91 library professionals randomly selected from eight state universities. Findings suggest that the library service quality measures should consider the resource capabilities in addition to perceived quality service users. Library professionals and decision-makers of the university can utilize this model and index to measure and increase the service quality level of the library. The quality measuring items were based on psychometric procedures. There can be a possible impact of localization.

Keywords: Library Service Quality, Service Quality Index, University Libraries of Sri Lanka, Resource-Capabilities.

Introduction

Library managers are required to address the growing importance of quality requirements of the library. Quality is attributed to many factors. In the service sector, it needs to be mostly based on customer satisfaction, but it will be incomplete if the service quality is determined only based on that aspect (Wilson et al 2002; Pakurár et al, 2019; Chuang et al, 2015). In the library sector, traditional quality indicators (such as the size of collections) which were used to measure the service quality in university libraries have become out of date today because they cannot address the demands of modern communities (Nitecki, 1996).

“The attributes associated with customer, vendor and trade partner relationships improve a company's ability to provide service as dedicated (Rahman and Ali, 2015). Service organizations provide services with the utilization of resources and capabilities they have and they acquire strategic capabilities to cater to the demand of the services. Hence, the quality of the service must be determined on relative availability and strategic leveraging of these resource capabilities too. In this circumstance, the measuring of the library's service quality singly based on customer perception will be incomplete. Customer perception is subjective to circumstances and personalization and in most cases, satisfaction scores are not standardized (Wilson et al., 2002). Satisfaction of the library users is a function of multiple sources that engage in the resource management of the library (Shi et al., 2004). Therefore, the quality measuring mechanism should be incorporated with the assessment of resource-capabilities of the library too (Taib et al., 2013). Customers generally determine their expectations with their past experiences and with the information they have from various sources like word of mouth. Thus user expectations can show high variations with their past experiences towards the service quality and if the quality measuring tools incorporate the relative availability of resource-capabilities in the library it will help to understand an averaged scenario of the library quality.

The evolution of Resource-Based Inquiry contributes to the divergence of variables related to many aspects of resource capabilities. Literature supports that key variables of resource capabilities of a service organization can constitute competitive capabilities, dynamic capabilities, and agility capabilities (D'Oria et al., 2021). Resources as human, physical or intellectual assets are important to an organization to achieve its objectives. Resource-based theory (RBT) attempts to explain the priority importance of resources to achieve superior performance (Prahalad and Hamel, 1990). The theory has been evolved through various approaches viz. Resource-Based View (RBV) (Barney, 1991; Penrose, 1959; Wernerfelt, 1984), Knowledge-Based View (Grant, 1996), Dynamic Capability View (Teece et

al. 1997; Kump et al 2019), and Agility capability view (Teece, 2019; Worley and Lawler III, 2010; Najrani, 2016). RBV has been massively used in management practices as an influential theory of strategic management (Newbert, 2007; Talaja, 2012).

Resources capabilities and competencies can be distinctive across firms and they generate the advantage to the firm for performances (Carmelia, and Tishlerb, 2004). University libraries possess distinctive assets and capabilities which have a positive impact on the service quality of the library (Al-Ahmad, 2016). Therefore, viewing the resource-capabilities of the library in terms of competitive capabilities, dynamic capabilities, and agility capabilities would be effective to understand their impact on quality.

Organizations need to keep track of their performance, customer satisfaction, and even their competitors (Pakurár et al, 2019). University libraries face the threat of competition from various commercial information service providers and web-based information tools commercial or open access and they must improve the quality of the services to survive (Cullen, 2001). To be competitive libraries should leverage resource capabilities. Generally, the service quality is relevant to employees' capabilities, productivity, and ability to create sustainable competitiveness (Chuang et al., 2015). Users reach the library if they are confident of the library's ability to provide any resource/service they expected. Then the competitive capabilities are essential to ensure the quality of the library.

Dynamic capabilities mean the organization's competencies that support the undertaking of necessary changes in response to the market changes. They facilitate the adaptation, integration, and configuration of internal and external resources (Alejandro et al., 2020). As dynamic organizations, university libraries need to re-evaluate their roles and service models to identify user expectations and their perceptions towards the services they provide and then make necessary changes and innovations to narrow the gap between expectations and perceptions. By strategically using the abilities and capabilities, librarians motivate the working force to effectively respond to the changing needs of the society concerned. They value their working environment, and it will help to attract new users and retain the existing users (Julie et al., 1998).

As another fact, the library needs to have an agile setup to leverage its resource capabilities. Agility is a set of organizational capabilities that helps to respond to customer requirements in a timely, efficient, and cost-effective way (Mathiassen and Pries-Heje 2006; Sambamurthy et al., 2003; Seo and La Paz, 2008). It supports resources to value-creating and value-protecting (Nafei, 2016). The agile environment supports the development of the quality of the library (Niemi-Grundström, 2014). Thus, it can be argued that the integrating of resource-capabilities in quality measuring would be more supportive to view the overall quality scenario of the library. Although there are different definitions

and interpretations, the variables such as competitive capability, dynamic capability, and agility capability would be many representatives of the resource-capability construct. Therefore, this study utilizes the terms competitive capability, dynamic capability, and agility capability to measure the resource capability of the library.

Service quality on the other hand has been utilized to evaluate the importance of the library. It has been viewed in different aspects. Earlier studies and conceptualizations on service quality in university libraries have concentrated on the input-output process, service provider's perspective, and performance or impact measurement through the user's perspective (Ahmad, 2016). Now the service quality seems to appear as a form of attitude and satisfaction.

According to the literature, many tools such as the Balanced Scorecard Model (Kaplan and Norton, 1992), EFQM model (European Foundation for Quality Management), SERVQUAL Model (Parauraman et al., 1988), SERVPERF Model (Cronin and Taylor, 1994), Total Quality Management Model (TQM) (Powell, 1995), LibQUAL+™ instrument (Association of Research Libraries), and ClimateQUAL model have been used to measure library service quality. All these tools have concentrated on assessing different aspects of the library service. LibQUAL+™ instrument is specifically designed for library evaluation purposes and it has been tested in many continents and many environments in the USA, Europe, and Asia.

Service quality is measured from users' point of view as many studies emphasized that the determination of quality should be based on users' view of perception. Among many tools administered to measure service quality, the LibQUAL+ tool seems more specific to the academic library context. Despite a few possible localization issues in the Sri Lankan context, the LibQUAL+ tool can be adopted to build up a measuring tool for user perception of the library quality in Sri Lanka. LibQUAL+ has 22 survey items to measure the users' perception of the library quality. The same measuring items can be adapted to measure the librarians' perception of service quality as service providers.

Only the user's perspective or provider perception-based measures cannot decide the library's overall service quality because assessment of library service quality requires both expertise and objectivity (Walters, 2003). Although there are many powerful tools to measure service quality in academic libraries, most assessment tools used today are one-sided (Xi and Levy, 2005; Boyce, 2017). Most importantly, the library's resources and capabilities play a major role in ensuring quality and satisfaction. Therefore, proper identification of resources and leveraging of their capabilities are essential for providing promised services. Thus, human factors, financial factors, technological factors, physical space, equipment, and other environmental factors directly influence the quality of

services provided. Then there should be a relationship between resource capabilities and service quality.

However, the existing tools have ignored the impact of strategic utilization of resources capabilities on the service quality of the library. It is puzzling if the quality is determined only on the attitudinal basis on global criteria without considering the relative importance of capabilities. Based on the above discussion, an integrative measuring model associated with users' perceived quality, librarians' perceived quality and resource capabilities would provide a much more comprehensive, representative, and conditional base picture of quality other than global benchmarking which is arbitrarily imitating the global criteria. Based on this approach it will be able to formulate a national level service quality index for university libraries. As this approach is still lacking in the literature, conceptual and empirical investigations are required to address the research gap. This study attempts to address this void. The purpose of this study is to develop an integrative service quality model associated with resource capabilities applicable to university libraries of Sri Lanka and thereby propose a service quality index for university libraries of Sri Lanka. The objectives of the present study are, to conceptualize the integrative model of service quality and resource capabilities, to measure the key variables of resource capabilities and perceived service quality and to propose a service quality index for university libraries of Sri Lanka.

Methodology

The study followed a quantitative method of sample survey through a self-administered questionnaire and descriptive analysis of data. Firstly, the key variables associated with service quality and resource capabilities in academic libraries were identified through the literature review based on the resource-based view and formulated a conceptual model representing these variables (Figure 1). The model measures the integrated service quality of the library through five variables viz. competitive capabilities, dynamic capabilities, agility capabilities, service provider's perceived quality, and service user's perceived quality (Figure 1).

Secondly, a survey instrument that included five questionnaires to measure the key variables and sub-variables was designed with the literature review and expert panel opinion following a vigorous process of scale development (Zamanzadeh et al., 2015; Carpenter, 2017). Accordingly, Questionnaire 1 which is available in the published literature (Arachchige et al., 2021) was utilized to measure the competitive capabilities (CC) of the library. Questionnaire 2 was adapted from Kump et al. (2019) to measure dynamic capabilities (DC) in the library context and the Questionnaire 3 was adapted from Worley and Lawler (2009) rephrasing and adding survey statements to fit the academic library environment aiming to measure agility capabilities (AC) of the library (Arachchige, 2021).

Questionnaires 4 and 5 were adapted from LibQUAL+tool (Association of Research Libraries, n.d.) rephrasing the survey statements to fit the local environment with the focus on service provider approach and service user approach respectively. They were aimed to measure the librarian's perception (PSQ) and user's perception (USQ) of service quality of their libraries.

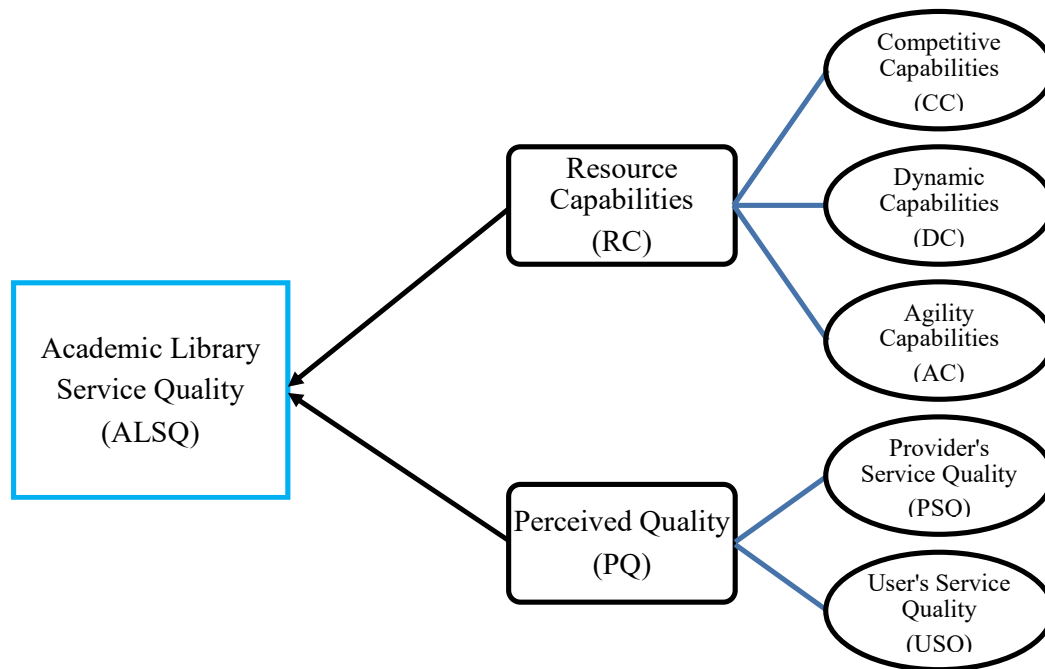


Figure 1: SEQ Figure * ARABIC 1: Service Quality model for university libraries

Questionnaire 1 (CC) contained four sub-variables viz, Valuable, Rare, Inimitable, and Organized (Barney 1991), and 16 items to measure them (Arachchige, 2021). Questionnaire 2 (DC) included three sub-variables viz. Sensing, Seizing, and Reconfiguring (Teece et al.) and 14 items to measure them. Questionnaire 3 (AC) included three sub-variables viz. Robust strategy, Adaptive design, and Cohesive Leadership (Worley and Lawler, 2009; Najrani 2016) and 16 items to measure them. Each of the questionnaires 4 (PSQ) and 5 (USQ) included three sub-variables viz. Service effect, Information Control, and Library as Place and 22 item statements to measure the perceived service quality. The zone of tolerance subscales: the minimum expected level and desired level of quality were ignored as they were confused to respondents and only the perceived level was selected for measuring of the service quality level. All the 90 survey item statements (CC-16+DC-14+AC-16+PSQ-22+USQ-22=90) were measured on 7 points Likert type scaling where 1= Strongly Disagree, 2=Generally Disagree, 3= Disagree to a certain extent, 4= Neither agree nor Disagree, 5= Agree to a certain extent, 6=Generally Agree, and 7=Strongly Agree.

The questionnaires went through a pre-test to get empirical feedback with a team of five library professionals who have knowledge of the field with doctoral/MPhil qualifications and more than ten years of experience in the university library field. The instrument was tested empirically with a random sample of 48 respondents from the university population. As the university librarian population is very low in Sri Lanka, five questionnaires were undergone separately to manage the issue of sampling adequacy. The exploratory assessment with SPSS (version 22, Principal Component Analysis, Varimax rotation) showed that all the items of five questionnaires were loaded above the .5 threshold.

For questionnaire 1, four factors have eigenvalues over Kaiser’s criterion of 1, and in combination, it explained 75.3% of the variance, and four factors were retained. The clustering of items suggests that Factor 1 represents the ‘Valuable’ domain, Factor 2 represents the ‘Organized’ domain, factor 3 represents the ‘Rare’ domain and factor 4 represents the ‘Inimitable’ domain. On the reliability scale, overall Cronbach Alpha was 0.782 which is well above the accepted level. Table 1 shows the factor loading on each item of questionnaire 01 (loadings below 0.5 were suppressed).

Table 1: Factor structure of the competitive capability measuring questionnaire

Rotated Component Matrix^a				
Term	Component			
	1	2	3	4
1. The electronic resource collection of the library is well covered with various subject disciplines so that it can attract more users.	.833			
2. The resource collection of the library is adequate, relevant, and comprehensive so that it can fulfill any requirement of users.	.830			
3. The staff of the library is smart and proficient that it can properly address the information needs of users.	.809			
4. Our library is popular as a place of study, research, and socialization.	.789			
5. Our library spends less on the hiring of experts because our employees have good knowledge and training in library matters	.765			
6. Users can fulfil a variety of needs from the library because downloading, printing, and photocopying facilities are available within the library	.750			
7. Access Tools of our library are well organized in a user-friendly manner so that users can locate needed information		.858		

Table 1: Factor structure of the competitive capability measuring questionnaire

Rotated Component Matrix^a				
on their own				
8. Procedures, policies, and opening hours of our library are arranged to maximize the convenience of users		.835		
9. Users can easily access the library resources from their home/office with online help through the website		.824		
10. Our employees are well trained and properly assigned to identify and serve different needs of different users		.690		
11. We have special and rare to find subject librarians in our staff.			.889	
12. Information Resource Collection of the library contains a lot of print and e-resources which are very difficult to find anywhere else.			.877	
13. We are the first to apply the modern and newest technology to the services offered by the library.			.846	
14. Our library has a prominent history as an efficient and attractive academic library in the country				.857
15. The culture and social image of our library is unique because other organizations cannot copy them				.803
16. The value-adding process of our library is difficult to be copied by others in the field				.784
Eigenvalues	4.508	3.945	2.260	1.336
% of Variance	28.178	24.655	14.125	8.351
Cronbach Alpha	.887	.863	.895	.896

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 6 iterations.

*these items are removed from the final questionnaire and main analysis.

For questionnaire 2, three factors had eigenvalues over Kaiser's criterion of 1, and in combination, it explained 71.102% of the variance. The instrument was aimed to extract three factors as in the original. The clustering of items suggests that Factor 1 represents the 'Sensing' domain, Factor 2 represents the 'Transforming' domain and factor 3 represents the 'Seizing' domain. On the reliability test of the scale, overall Cronbach Alpha was 0.893 which is well above the accepted level. Table 2 shows the factor structure of questionnaire 2.

Table 2: Facture structure of the dynamic capability measuring questionnaire

	Rotated Component Matrix			
		Component		
		1	2	3
DCS1	Our library learns from the best practices prevailing in the information service sector	.869	.235	
DCS2	We systematically observe and evaluate the current needs of university communities	.862	.163	
DCS3	We are staying up to date with the current market situation related to information services	.840		.310
DCS4	Our library has an eye on our competitors' activities and technology they use	.817	.131	.209
DCS5	We as a university library know how to access newly emerging information sources	.815	.218	.159
DCT6	Our library has demonstrated its strengths and abilities in implementing changes in the past		.825	.251
DCT7	Our library can practice change projects together with its daily operations	.216	.806	.314
DCT8	We successfully implement changes in our library by defining clear responsibilities to the staff	.252	.792	
DCT9	We have regular transformational programmes to overcome unexpected interruptions		.772	.144
DCT10	Our library takes correct decisions on strategic changes consistently	.189	.536	.243
DCZ11	Our library can quickly relate to new knowledge and technologies emerging in the field	.117	.295	.815
DCZ12	We actively recognize and utilize new mechanisms in our service operations	.226	.244	.799
DCZ13	We take the changes as opportunities to develop and provide new services with the use of current information		.103	.788
DCZ14	Our library is capable of turning new technological knowledge into the process and product innovation	.337	.217	.749
Eigenvalues		6.091	2.299	1.564
% of Variance		43.506	16.422	11.174
Alpha		.922	.848	.860

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

Table 3: Facture structure of the agility capability measuring questionnaire				
Rotated Component Matrix				
		Component		
		1	2	3
AGR1	The library often develops strategies to achieve its objectives in a flexible manner	.920		
AGR2	The strategies of the library are focused on future development and growth	.913		
AGR3	All employees of the library work under a unified sense of mission.	.871		
AGR4	The library can quickly identify the changes of user needs and required technology for them	.856		
AGR5	The library is good at applying experiences and forming new strategies	.839		
AGR6	The library provides employees an accurate sense of how the organization is performing	.834		
AGA7	The library has formed a flexible structure to enable employees to take advantage of opportunities		.809	
AGA8	The library reallocates its resources (e.g., budgets) easily as circumstances require		.798	
AGA9	The library is capable of adjusting its structure quickly to address new opportunities		.788	
AGA10	The library management encourages innovation in the field		.783	
AGA11	The library appreciates and pays for the skills and knowledge of employees that contribute to performance		.763	
AGA12	The library has formal mechanisms to connect senior management at all levels		.649	
AGS13	The library management encourages innovation in the field			.828
AGS14	All the employees of the library work as a cohesive team to perform promised services			.786
AGS15	The library develops leaders at all levels of library operations			.723
AGS16	The library supports its employees develop new knowledge and skills			.701
Eigenvalues		5.977	4.457	1.072
% of Variance		37.356	27.853	6.698
Alpha		.939	.898	.854

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 5 iterations.

For questionnaire 3, three factors had eigenvalues over Kaiser’s criterion of 1 and it explained 71.907% of the variance. Cronbach Alpha for each factor was well above the accepted level and overall Cronbach Alpha scored .883. Accordingly, cluster 1 represents the ‘Robust Strategy’ domain, cluster 2 represents the ‘Adaptive Design’ domain and cluster 3 represents the ‘Cohesive Leadership’ domain of the construct. Table 3 explains the factor loadings of each item and the alpha value of each factor.

For questionnaire 4, three factors had eigenvalues over Kaiser’s criterion of 1, and in combination, it explained 73.56% of the variance. Overall Cronbach Alpha level was 0.831 which is well above the accepted level. Item clustering confirmed factor 1 represents the ‘Service Affect’ domain, factor 2 represents the ‘Information Control Domain’ and factor 3 represents the ‘Library as Place domain as in the original LibQUAL tool (Table 4).

Table 4: Factor structure of the service provider perception measuring questionnaire

	Rotated Component Matrix			
	Survey Items	Component		
		1	2	3
PQSA1	Employees of the library can still confidein users	.865		
PQSA2	Employees of the library give individual attention to users	.862		
PQSA3	Our staff is always ready to respond to users’ questions	.857		
PQSA4	Our employees work with users in a caring fashion	.829		.229
PQSA5	Employees of the library have the knowledge required to answer users’ questions	.789		.332
PQSA6	Employees of the library are reliable in handling users’ service problems	.778		
PQSA7	Staff of the library is always courteous towards users	.743	-.219	.200
PQSA8	Our employees have willingness to help users	.724	-.213	.233
PQSA9	Library’s employees can properly understand the needs of users	.671	-.168	.260
PQIC10	Electronic resources of the library are accessible from the user’s home or office	-.125	.903	-.159
PQIC11	The library has made available easy-to-use access tools that allow users to find things on their own	-.123	.881	-.127
PQIC12	The library has a sufficient amount of electronic information resources that users need		.871	
PQIC13	The library has modern equipment to let users easily access needed information		.852	

Table 4: Facture structure of the service provider perception measuring questionnaire

	Rotated Component Matrix			
	Survey Items	Component		
		1	2	3
PQIC14	The library has a sufficient amount of printed materials that users need for their work		.835	
PQIC15	The library has made independent use of information through easy accessibility		.803	-200
PQIC16	My library has an efficient Web site that enables the user to locate information on their own	-.219	.784	-.173
PQIC17	The library has print and/or electronic journal collections required for users' works	-.158	.781	
PQLP18	The library has made available sufficient space that inspires study and learning	.199	-.116	.911
PQLP19	The library has allocated comfortable and quiet space for individual activities of users		-.185	.891
PQLP20	The library has made available community space for group learning and group study	.175	-.128	.882
PQLP21	The library has been established in a comfortable and inviting location			.880
PQLP22	The library is capable of functioning as a getaway for study, learning, and research	.242		.872
Eigenvalues		8.238	4.796	3.150
% of Variance		37.445	21.801	14.318
Alpha		.933	.945	.949

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 4 iterations.

Questionnaire 5 was aimed to measure the perceived service quality of users. An initial exploratory factor analysis was run to examine the factor structure. Three factors had eigenvalues over Kaiser's criterion of 1 and in combination, it explained 67.762% of the variance. Table 5 shows the factor loading after rotation. The clustering of items suggested that Factor 1 represents the Service Effect domain (9 items), Factor 2 represents the Information Control domain (8 items) and factor three represents Library as Place domain (5 items). Cronbach's Alpha 0.958 for overall 22 items showed the reliability of the instrument.

Table 5: Façture structure of the service users' perception measuring questionnaire

Item code	Rotated Component Matrix			
	Survey items	Component		
		1	2	3
UQSA1	Employees of the library still confide in me for using the library.	.850	.174	.205
UQSA3	Employees of the library are consistently courteous to me	.841	.143	.215
UQSA2	Employees of the library give me individual attention in library matters.	.814	.286	.209
UQSA9	Employees of the library are dependable in the handling of users' service problems	.798	.244	.151
UQSA4	Employees of the library are always ready to respond to my questions	.764	.276	.269
UQSA5	Employees of the library know how to answer my questions	.759	.158	.214
UQSA6	Employees of the library deal with me in a caring fashion	.748	.378	.223
UQSA7	Employees of the library can understand my needs	.710	.364	.152
UQSA8	Employees of the library have the willingness to help me	.677	.417	.106
UQIC10	The library makes electronic resources accessible on/off campus	.252	.805	.172
UQIC12	The library provides printed materials I need for my studies and work	.209	.752	.315
UQIC11	The library Website enables me to easily locate information on my own	.271	.672	.424
UQIC13	The library provides a wide range of electronic information resources I need	.342	.653	.337
UQIC15	The library has easy-to-use catalogues that allow me to find things on my own	.399	.574	.385
UQIC14	The library has modern equipment that lets me easily access information I need	.269	.571	.282
UQIC16	The library has made facilities for independent use of information resources	.397	.552	.406
UQIC17	Printed and/or electronic journal collections I require for my work	.289	.530	.360
UQLP18	The library provides comfortable space that inspires	.147	.308	.841

Table 5: Facture structure of the service users’ perception measuring questionnaire

		Rotated Component Matrix		
Item code	Survey items	Component		
		1	2	3
	study and learning			
UQLP20	The library is located in a comfortable and inviting place	.221	.273	.785
UQLP19	The library has quiet space for individual activities of users	.169	.292	.742
UQLP22	The library has made available community space for group learning and group study	.217	.205	.740
UQIC21	The library of my university is a gateway for study, learning or research	.265	.327	.554
Eigenvalues		11.612	2.269	1.027
% of Variance		52.782	10.312	4.668
Alpha		.950	.913	.878

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Thus based on the above discussion, the instrument was assumed to be valuable and reliable to collect data from the sample.

Data Collection

The study was designed to collect data from two sets of samples; service providers and service users. Data were collected from 2247 users (students + teachers) and 91 library professionals randomly selected from eight state universities governed under UGC of Sri Lanka viz. The University of Peradeniya, University of Sri Jayewardenepura, University of Kelaniya, University of Jaffna, University of Ruhuna, Rajarata University, and Wayamba University. The questionnaires (1-4) were distributed among librarians via e-mail in February 2021 collected within two weeks. Questionnaire 5 was distributed among user samples physically (and through a Google form in cases of physical unavailability) with the support of the librarians of select universities. Simple statistical analysis was performed to determine the average and percentage of responded values.

Results and Discussion

The response rate was 75% which is satisfactory for the analysis. An initial exploratory factor analysis (SPSS 22nd version) run separately for each questionnaire verified the factor structure proposed in the

model and each item of all five questionnaires indicated the Eigenvalues over 0.50 assuring the validity of the data. Total Cronbach’s alpha for each questionnaire (CC- 0.819, DC- 0.890, AC- 0.850, PSQ- 0.835 and USQ- 0.839) verified the accepted reliability level of the data.

Respondent’s ratings against each survey item were calculated according to the scale value (1-7) and summated against the respondent. Then the average score per each key variable (CC, DC, AC, PSQ, and USQ) was calculated by dividing the sum of the score for the variable by the number of respondents. Averages for key variables (CC, DC, AC, PSQ, and USQ) were summated to obtain the total per university library (Table 1). The results indicate that the agility capabilities and competitive capabilities are higher than the dynamic capabilities in all libraries and the service providers’ perception of service quality is higher than the users’ perception of services quality (Figure 2). Yet, agility capabilities and competitive capabilities showed variations among libraries.

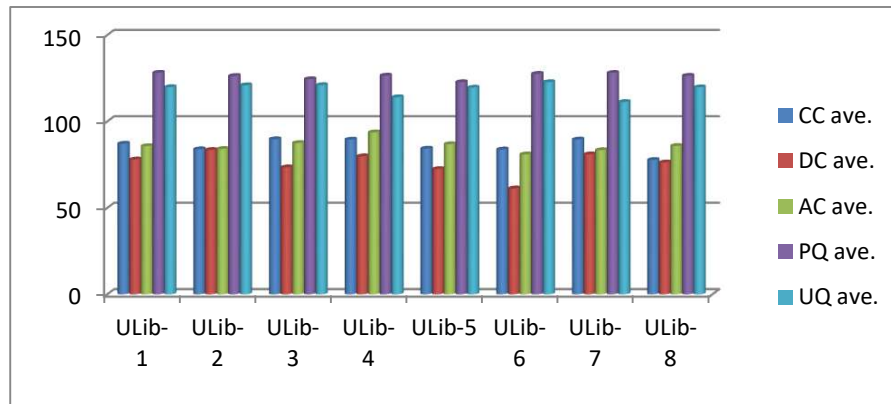


Figure 2: Perceived resource capabilities and perceived service quality in university libraries

To determine the overall integrated quality level per university, firstly, the maximum possible score per each key variable was calculated by multiplying the maximum scale value (7) by the number of survey items (16x7=112, 14x7 =98, 16x7=112, 22x7=154, and 22x7=154) and summated the products together (112+98+112+154+154= 630). Secondly, the total score per university library (CC+DC+AC+PSQ+USQ) was divided by the maximum possible score (630) according to the following formula.

$$ISQ = \frac{CC_{average} + DC_{average} + AC_{average} + PSQ_{average} + USQ_{average}}{630}$$

where,

ISQ= Integrated service quality, $CC_{average}$ =average score for competitive capabilities,

$DC_{average}$ = average score for dynamic capabilities,

$AC_{average}$ =average score for agility capabilities,

$PSQ_{average}$ = average score for providers' perception,

$USQ_{average}$ = average score for users' perception.

Table 6 indicates the average score for each key variable, the summated value, maximum possible score, and the quality level achieved by each university library. According to table 1, any university library that achieved the value 01 will reach the complete quality level. Demarcation of quality levels can be determined as 0.9-1= highest quality, 0.75-0.89= high quality, 0.5- 0.74= average quality, 0.35-0.49=low quality and below 0.34= very low quality. Or from 0.75 to 1= high quality, 0.5 to 0.74 = average quality and below 0.49 = poor quality. This can be multiplied by 100 if it is required to obtain the percentage value.

Table 6: Integrated Service Quality Index for university libraries

Library	CC ave.	DC ave.	AC ave.	PQ ave.	UQ ave.	Total sum ave.	Sum Possible total	Achieved quality level	Quality in %
ULib- 1	87.143	78.000	85.714	128.143	119.839	498.839	630	0.792	79.18
ULib- 2	83.917	83.500	84.083	126.333	120.938	498.771	630	0.792	79.17
ULib- 3	89.727	73.455	87.545	124.455	121.034	496.216	630	0.788	78.76
ULib- 4	89.500	79.833	93.667	126.500	114.009	503.509	630	0.799	79.92
ULib-5	84.267	72.467	86.867	122.733	119.561	485.894	630	0.771	77.13
ULib- 6	83.769	61.231	80.923	127.538	122.756	476.218	630	0.756	75.59
ULib- 7	89.538	81.000	83.385	128.077	111.273	493.273	630	0.783	78.30
ULib- 8	77.714	76.286	85.857	126.429	119.769	486.055	630	0.772	77.15

The last two columns of Table 6 show the integrated service quality level of each library.

Conclusions

The purpose of this study was to propose a service quality index applicable to university libraries of Sri Lanka. Considering the research gap in the literature the study aimed at the conceptualizing of an integrated multifaceted model to evaluate the service quality. The proposed model seeks the service quality of the university library in five aspects: competitive capabilities, dynamic capabilities, agility capabilities, serviced provider's perceived quality, and service users' perceived quality. It considers the competitive factors of resources available in the library in terms of valuable, rare, inimitable, and organized because the university library cannot achieve the quality without competitive resources.

The model also concentrates on the condition of dynamic capabilities in terms of sensing, seizing, and reconfiguring because quality is immaterial without leveraging the resource to match the market needs. Here the library needs to sense the unpredictable changes of the library environment, seize the opportunities from these changes and reconfigure the resources and capabilities to implement the innovations and modifications to face the changes of user requirements.

Moreover, the model considered the organization's agility capabilities because just having the resources cannot complete the performance. Activation of dynamic capabilities is difficult if the library has no agile setup to face the unpredictable turbulence. For this, the library should have agility capabilities such as robust strategies to respond to the market needs, a flexible structure capable of adapting quickly to the changes, and a cohesive team guided by an efficient leadership to use the resources to fulfil the market needs.

Quality is a psychological concept and it is necessarily related to the customer perception of satisfaction. Therefore the model considers the user's point of view regarding the library service. Here, the perception of the service provider as well as the perception of the service user is important. Therefore, the model concentrated on the evaluation of three key service factors of the university library viz. service effect, information control, and library as place in both points of view of the use as well as the librarian. This includes the conditions of staff support, access to information resources, and the physical space and facilities of the library. Accordingly, the librarian's perception of how good they provide the services is considered while considering the user's perception of how good the services they receive. Overall perceived service quality is determined in both aspects (service provider and service user) and this balances the impact of the provider-user perception gap towards the quality.

Based on the conceptual model, the survey instrument which consisted of five questionnaires was constructed. All the five key variables were measured through the survey instrument and results were averaged to integrate resource capabilities and perceived service quality (objective 2). The proposed index indicates the overall quality level of each library as an indicator. It can be used to measure the service quality level of a particular university library and identify the development needs and areas for ensuring service quality. This study concentrated on the service quality in multiple aspects associated with the personalized perception of quality as well as the perception of resource capabilities of the library. The author adheres that just asking the customer how service is good is not enough to measure the service quality. Service quality should go beyond satisfaction and personalization, but on the overall environmental condition of the library. This may also address the limitation of the benchmarking strategy such as arbitrarily copying the other organization's criteria without localization. Benchmarking might be incomplete if the resource-capability gap between the developing countries

and developed countries is wide. This model also may address the cultural, localization, and socio-economic impact on service quality.

By further developing the index with a computer-based program, it might be able to facilitate the stakeholders of the library to contribute to the evaluation of service quality in a frequent period. More research can identify the latent factors associated with the service quality measuring in university libraries in a global setting.

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