The relationship between service quality and customer satisfaction: the example of CJCU library

I-Ming Wang

Chich-Jen Shieh*

Department of International Business

Chang Jung Christian University

396, Chang Jung Rd., Sec. 1

Kway Jen, Tainan

Taiwan 71150

R.O.C.

Abstract

The present paper, taking Chang Jung Christian University (CJCU) Library as an example, investigates the users' degree of importance and the performance provided by the library. This study explores overall user satisfaction as well. A questionnaire survey is conducted to reveal users' perspectives on service quality. Based on literature, service quality has five dimensions, which are tangibles, responsiveness, reliability, assurance, and empathy. The results indicate that the overall service quality has a significantly positive effect on overall user satisfaction. Among these five dimensions except responsiveness, all of them have a significantly positive effect on overall user satisfaction. In addition, the top five important service quality features ranked by users are: collections, loaning and returning service, overall atmosphere, electronic database system, and online reservation and renewal. Furthermore, the perceived importance of service quality dimensions has no significant difference among institutes and status.

E-mail: `charles@mail.cju.edu.tw`

1.   Introduction

The English word "Library" comes from "Libraria" in Latin. The fundamental perspectives are as follows: (1) A library is the place where books and papers are collected and gathered; (2) those books and papers are for public utilization (Huang, 1995). From this point, though libraries are non-profitable organizations, they should be more concerned on how to bring satisfactory services when offering information and data to readers. Hence, "user satisfaction" is what librarians always devote efforts to pursue. User satisfaction comes from service quality, which is based on whether readers are satisfied or not. Therefore, to improve service quality is to provide services that meet readers' expectations and satisfy their needs. When readers are not satisfied, it is inferred that there is something wrong with the library.

The study, taking Chang Jung Christian University (CJCU) Library as an example, surveys users' importance on every service attributes and their evaluations toward the library. Main purposes for the study are threefold:

(1) To discuss readers' importance on every service attributes;
(2) To discuss the relationship between service quality and user satisfaction;
(3) To compare readers' importance on every service attributes based on different colleges and identities.

Though we can analyze the performance of libraries from some statistical information, such as the number of people using the services, the number of people loaning books, and so forth, it is still inadequate to reveal what readers' real perceptions of the library. From this point, the study applies questionnaire survey, attempting to catch on the overall service quality of CJCU Library from readers' perspectives and from objective statistical analyses.

2.   Literature review

The study investigates every service provided by libraries based on the theories of "service quality" and "customer satisfaction". Literature reviews on relevant concepts are discussed in the following section in order to develop the research hypotheses.

2.1   *Service quality*

2.1.1   Definition of "Service Quality"

Parasuraman et al. (1985) defined service quality as "the global evaluation or attitude of overall excellence of services". So, service quality is the difference between customers' expectation and perceptions of services delivered by service firms. Nitecki et al. (2000) defined service quality in terms of "meeting or exceeding customer expectations, or as the difference between customer perceptions and expectations of service". As the research is focused on examining major users of CJCU Library, the library service quality is defined as "the overall excellence of library services that satisfy users' expectation".

2.1.2   Measures of "Service Quality"

Parasuraman et al. (1985) studied four different types of services, including banking industry, credit card companies, motor repair shops, and long-distance telecommunication companies, and the results showed that service quality had dimensions as reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer, and tangibility. Later in 1988, these ten dimensions were cut down to five ones: tangibility, reliability, responsiveness, assurance, and empathy. Furthermore, Sureshchandar et al. (2001) identified five factors of service quality, which were core service or service product, human element of service delivery, systematization of service delivery, tangibles of service, and social responsibility.

Parasuraman et al. (1985; 1988) proposed the SERVQUAL scale for measuring service quality. Cronin et al. (1992) indicated four different measurement models, including SERVQUAL, SERVPERF, Weighted
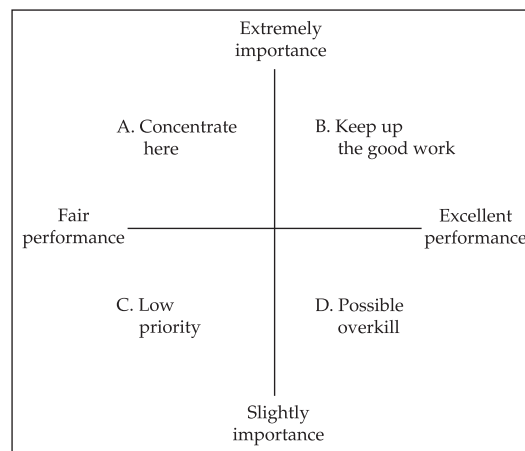
SERVQUAL, and Weighted SERVPERF, among which SERVPERF was considered the best. Furthermore, the Importance-Performance Analysis, proposed by Martilla et al. (1977) was another technique for measuring service quality. The importance-performance grid was used to determine which items needed urgent improvement or which resources were allocated improperly (see the figure at the right hand for more information).

2.1.3   Library service quality

Martensen and Gronholdt (2003) reviewed literature and surveyed focus groups, indicating that key determinant for library service quality were: electronic resources, collections of printed publications, other library services, technical facilities, library environment, and human side of user service. Hernon et al. (1999) conducted a series of factor analyses on over 100 variables and found that the dimensions of library service quality included: guidance, waiting time, electronic services, staff (including obtainment courtesy, accessibility of services, and friendliness), and accurate places of data, normal operations of equipments, handling time of data delivery, library buildings and environment, library facilities (such as drinking fountains), data that met users' needs, and so forth. Majid et al. (2001) applied a questionnaire survey to investigate all possible factors that had great impacts on library performances. The results showed that collections, equipments, and physical facilities were viewed as most important issues. In addition, Chang and Hsieh (1996) conducted an exploratory study on the perceptions of library service quality, focusing on key users including faculty and students from 21 universities in Taiwan. They employed a questionnaire survey and a series of factor analyses. The results indicated proposed seven factors including "competence, moderation, convenience, tangibles, communications, and sufficiency of staff' as major determinant of service quality.

2.2   *Customer satisfaction*

2.2.1   Definition of customer satisfaction

Kotler (1996) defined customer satisfaction as "the level of a persons felt state resulting from comparing a product's perceived performance or outcome in violation to his/her own expectations". So, customer satisfaction could be considered a comparative behavior between inputs beforehand and post obtainments. As the study focused on investigating

user satisfaction of libraries, customer satisfaction is defined as "the levels of service quality performances that meets users' expectations".

2.2.2 Measurement of customer satisfaction

Westbrook (1980) suggested that future researchers propose multi-item scale for measuring customer satisfaction, lowering measurement errors and improving the scale reliability at the same time. Sureshchandar et al. (2002) pointed out that customer satisfaction should be viewed as a multi-dimensional construct and the measurement items should be generated with the same dimensions of service quality. In addition, Lee (1999) conducted a case study on the Library of Council for Economic Planning and Development of the Executive Yuan, investigating users' usage on the library service and their satisfaction. Circulation operations, collections utilization, environment and physical facilities, attitude of the staff, serving manners, and education and consultancy are considered as 6 major dimensions for evaluating user satisfaction. The results serve as a reference for the library to improve its service quality and service performance.

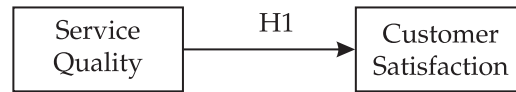### 2.3 *Service quality and customer satisfaction*

Ruyter et al. (1997) modified the SERVQUAL scale and empirically tested the health care service of chiropractic care, attempting to determine the relationship between service quality and customer satisfaction. The results suggest that service quality should be treated as an antecedent of customer satisfaction. Brady et al. (2001) employed LISREL analysis to study customers of fast-food restaurants in America and Latin America. The results indicated that there was a certain relationship between service quality and customer satisfaction based on different cultural background. In addition, service quality had significantly impacts on customer satisfaction. Sureshchandar et al. (2002) found that service quality and customer satisfaction were highly related.

3. Methodology

3.1 *Research framework*

Based on the literature review in the previous section, the framework for the study was developed and shown in Figure 1. Major objectives

for the study are to discuss the impacts of the five dimensions of service quality on user satisfaction. Moreover, the study further discusses the degree of importance of CJCU users on every service attribute and the performance of CJCU Library, attempting to comprehend whether CJCU Library provides satisfactory services and meets users' expectations.

Figure 1
Research framework

3.2 *Research hypotheses*

In order to discuss the impacts of the five dimensions of service quality on user satisfaction, the research hypotheses are as follows:

H1: Overall service quality has a significantly positive effect on user satisfaction.

  1.1: "Tangibles" of services has a significant impact on user satisfaction.

  1.2: "Responsiveness" of services has a significant impact on user satisfaction.

  1.3: "Reliability" of services has a significant impact on user satisfaction.

  1.4: "Assurance" of services has a significant impact on user satisfaction.

  1.5: "Empathy" of services has a significant impact on user satisfaction.

H2: There is a significant difference of degree of importance on every service attribute among users from different departments.

H3: There is a significant difference of degree of importance on every service attribute among different users.

3.3 *Research design*

Library users in the study are faculty, students, and schoolfellows of CJCU who use every service in the library. A questionnaire survey was applied to investigate the degree of importance held by respondents toward every service attribute and the performance of CJCU Library. At the end of the questionnaire, respondents were asked about their satisfaction. We delivered directly in the library and collected 60 convenient samples for data analysis. Among them, some were people from outside. Because of difficulty of sampling and they were not major targets to serve, they were excluded in the study. A total of 58 samples were collected, with a response rate of 96.67%; however, 3 of which were considered invalid data and should be deleted because of careless answers or incomplete surveys. Finally, a number of 55 samples for data analysis were retained, with a valid response rate of 91.67%.

The study is aimed at discussing the relationship between service quality and user satisfaction. Every variable in the research framework and its operational definitions was illustrated in this section, which was regarded as the basis for measurement. The study has three variables:

3.3.1 Service quality

In the present paper, service quality is defined as the degree of overall excellence of library service that meets users' expectations. Based on the SERVQUAL scale proposed by Parasuraman et al. (1988), service quality is deemed as having five dimensions — tangibles, responsiveness, reliability, assurance, and empathy (please refer to Table 1). For the measurement of service quality, SERVPERF by Cronin et al. (1992) is reviewed and finally a scale of 42 items was established as the study questionnaire.

3.3.2 User satisfaction

The study defines user satisfaction as the degree of perceived quality that meets users' expectations. In order to improve the scale reliability, we design a multi-item scale proposed by Westrook (1980) with two measurement items. The mean score is calculated as to represent overall user satisfaction.

Table 1
Dimensions of service quality

Dimensions	Description
Tangibles	Physical facilities, equipments provided by the library and the looks of the library staff
Responsiveness	Library staff's willingness to help users or provide prompt services
Reliability	To provide reliable and accurate services
Assurance	Staff's knowledge and courtesy that make users assured and confident
Empathy	Staff's empathy to provide concerns or individual attentions

3.3.3   Personal data of users

In comprehending whether personal characteristics will have impacts on their importance on every service attribute, the study ask users to provide personal data such as sexuality, what departments they are from, what identity they have, frequency of using the library, and key objectives of using the library.

3.4   *Questionnaire design*

3.4.1   Contents

A structured questionnaire was applied in the research to collect data. The questionnaire has three parts:

(1) *Personal data of users*: including sexuality, what departments they are from, what identity they have, frequency of using the library, and key objectives of using the library.

(2) *Importance of every service attribute and the performance of CJCU Library*. A 5-point Likert scale was employed to measure users' perceived importance on the service attributes, ranging from 1 (extremely unimportant) to 5 (extremely important). The performance of CJCU Library was also measured with a 5-point Likert scale, ranging from 1 (extremely bad) to 5 (excellent).

(3) *User satisfaction*: also used a 5-point Likert scale. Two measurement items were proposed and a 5-point Liker scale was used, ranging

from 1 (strongly disagree) to 5 (strongly agree). In order to comprehend users' suggestions for library service quality, an open-ended was designed at the end of the questionnaire.

3.4.2 Reliability and validity

A questionnaire survey was adopted to confer to users' viewpoints and perceptions towards library services. We delivered the self-administered questionnaires in CJCU Library and collected them after users finished them. The scale reliability and validity were illustrated with details in this section.

The present study used Cronbach's alpha, a method of measuring internal consistency, to evaluate whether the scale had reliability. When Cronbach's alpha is higher, it means the internal consistency of items from the scale is higher. A total of 55 valid samples were collected. The scale had 49 items. In order to evaluate the internal consistency, item-to-total correlations were calculated, showing that 7 of the items did not reach the criteria. Thus, these 7 items were deleted. The final Cronbach's alpha for the scale was 0.9471, which was satisfactory. So, the number of items in the questionnaire was reduced from 49 items to 42 items. The reliability of identified constructs was showed in Table 2.

Validity is to evaluate whether the instrument can truly measure the items we are intended to study. The research is based on literature, so it could achieve the required validity. Moreover, one question, the construct validity item, concerning overall service quality, could be used to ask respondents, obtaining the construct validity. The correlation coefficient between the SERVQUAL scale and the overall service quality item is to determine whether the scale has construct validity (Parasuraman et al., 1988). In principle, respondents having higher scores on every dimension of service quality and higher mean service quality score would probably more agree with the construct validity question. In order to discriminate the perceived service quality of users, the respondents are clustered into three groups. After calculating the correlation coefficients between every service quality dimension and the overall service quality score, the results show that they are highly correlated. Thus, the instrument for the study has construct validity (please refer to Table 3).

Table 2
Dimensions of service quality (overall reliability = 0.9471)

	Dimension of service quality and attribute	Cronbach's alpha	Item-to-total correlations
A.	**Tangibles**	0.8818	
	There is a sufficient number of periodicals		0.6625
	There is a sufficient number of books		0.7785
	There is a sufficient number of technical reports		0.7586
	The collections have complete volumes Database is in good working order		0.5845
	The database is in good condition		0.6005
	The environment is clean		0.4372
	There is a sufficient number of study rooms and conference rooms		0.5863
	There is a sufficient number of computers for data research		0.5764
	Study areas are comfortable		0.5241
	The lighting quality is fine		0.4789
	The overall reading atmosphere is good		0.5628
B.	**Responsiveness**	0.5919	
	Library staff tries best to answer questions		0.4203
	Library staff actively and aggressively provides services		0.4203
C.	**Reliability**	0.6026	
	The collections are timely		0.4350
	The collections are shelved accurately		0.2648
	The loan and return records are accurate		0.3873
	The content of library website is abundant and sufficient		0.4756
	The staff can answer questions accurately		0.2529
D.	**Assurance**	0.5680	
	The classification fits in with all subjects		0.2643
	Directional signs in the building are clear		0.3596
	Library staff is friendly and courteous		0.2907
	Library staff is aware of every service item		0.4989

(*Table 2 contd.*)

	Dimension of service quality and attribute	Cronbach's alpha	Item-to-total correlations
E.	**Empathy**	0.9196	
	The library provides loan and return services of data		0.5553
	The collections meet course needs		0.6239
	The library provides multi-media services (ex video tape)		0.6083
	The library provides microcopies of data		0.5618
	The library provides newspaper for users		0.5081
	The volume of loans is sufficient		0.6214
	The loan deadline is satisfactory		0.4911
	The number of times of re-loan is satisfactory		0.5482
	On-line reservation and re-loan service is satisfactory		0.5161
	The library provides electric publications and electric database		0.6095
	The library provides areas for data research on the first floor		0.6631
	The regular length of opening hours is satisfactory		0.6973
	The length of opening hours for holidays is satisfactory		0.7411
	The length of opening hours for winter/summer vacation is satisfactory		0.5824
	The length of opening hours for multi-media center is satisfactory		0.7236
	The library provides cooperation between different libraries		0.5456
	The library provides training courses for resource utilization		0.4985
	The library provides exhibits for new books on the first floor		0.4757
	The library provides services of book research		0.5204
	The library provides music listening areas		0.4713

Table 3

The correlations between service quality dimensions and construct validity item

	Lower 5	Normal 42	Higher 8	r
Tangibles*	3.05	3.73	4.21	0.593*
Responsiveness	3.40	3.63	3.87	0.195
Reliability*	3.04	3.69	4.15	0.576*
Assurance*	3.45	3.66	4.18	0.345*
Empathy*	3.15	3.77	4.22	0.585*
Mean score of service quality*	3.21	3.70	4.13	0.582*

Note: (a) : r is the correlation coefficients between service quality dimensions and the construct validity item.
(b) : * indicates significant difference of mean scores within groups.

4. Analysis

4.1 *The sample*

Personal data of respondents were analyzed to determine whether the sample was representative for the population.

4.1.1 Personal data of respondents

After the data being collected, 69.1% of the samples were male, which 30.9% were female. As for which departments these respondents were from, most of the samples were from the Institute of Engineering, and the Institute of Administration was the next one.

4.1.2 Utilization of CJCU library service

It is designed to reveal the frequency of using CJCU Library and the major objectives. It is noted that users usually go to CJCU Library twice a week. Their major objectives are: data consulting or loaning collections.

4.2 *Analysis of service attributes*

A structured questionnaire survey was employed to find out the importance perceived by users on every service attribute.

For all users, the results showed that the top three important attributes were "a sufficient number of books", "providing loans and

returning services", and "the overall reading atmosphere". The most important attribute was the sufficient number of books with a mean score of 4.53. Its standard deviation was 0.60, the smallest one in the study, which meant that all users paid much attention on this attribute. On the other hand, the least three attributes were "providing microcopies of data", "providing music listening areas", and "provides training courses for resource utilization".

For student users, the top five important attributes were "fine lighting quality", "providing loans and returning services", "overall reading atmosphere", "database in good condition", and "a sufficient number of books". For school faculty members, the first five important attributes were "staff's willingness to provide services", "clear directional signs", "the collections meeting course needs", "the classification fitting in with all subjects", and "a sufficient number of books".

4.3 *The relationship between service quality and user satisfaction*

A series of simple regression analyses were adopted by the present study to reveal the relationship between service quality and user satisfaction. The impacts of every service dimension on user satisfaction were studied as well.

4.3.1 The relationship between overall service quality and user satisfaction

In order to understand whether there was a significant relationship between service quality and user satisfaction, a simple regression analysis was employed (please refer to Table 4). From Table 4, it indicated that there was a significantly positive relationship between service quality and user satisfaction (p-value $= 0.000$). In addition, the R^2 was 0.410, which was statistically significant. Hence, the model was supported.

4.3.2 The relationship between service quality dimensions and user satisfaction

A series of simple regression analyses were adopted to reveal whether service quality dimensions and user satisfaction had significant relationship (please refer to Table 4). At $p < 0.05$ level, all dimensions other than "responsiveness" had significantly positive impacts on user satisfaction. From Table 4, it was concluded that Hypothesis 1 was mostly supported.

Table 4

Regression analyses on the relationship between service quality and user satisfaction

Model	Estimated B	t-value	p-value	R^2	D-W
Overall service quality → user satisfaction	1.059	6.071	0.000	0.410	1.663
Tangibles → user satisfaction	0.826	6.542	0.000	0.447	1.755
Responsiveness → user satisfaction	0.198	1.339	0.186	0.033	0.913
Reliability → user satisfaction	0.829	6.054	0.000	0.409	1.615
Assurance → user satisfaction	0.605	3.441	0.001	0.183	1.165
Empathy → user satisfaction	0.867	5.667	0.000	0.377	1.664

4.4 *The impacts of users' personal characteristics on their perceived importance on service quality*

In order to examine whether there is a significant difference of importance on service quality between users having different characteristics, ANOVA is applied.

4.4.1   Users from different institutes

With an attempt to reveal whether there is a significant difference of importance on library service quality between users from different institutes, a multivariate ANOVA was employed, suggesting that there is no significant difference (Wilk's Lambda = 0.683, p-value = 0.543). Thus, Hypothesis 2 was not supported by the results.

4.4.2   Users of different identities

A multivariate ANOVA was applied to reveal whether there is a significant difference of importance on library service quality between users having different identities. The results indicated a significant difference (Wilk's Lambda = 0.664, p-value = 0.026.) Therefore, we further analyzed the difference of importance on each service quality dimension.

The results from ANOVA tests showed that no significant difference was obtained. Thus, Hypothesis 3 was not supported as well.

5.   Conclusions and recommendations

The present study examined CJCU Library users via questionnaire survey, trying to figure out users' importance on every service attribute and their perceptions. The results showed a significantly positive relationship between overall service quality and user satisfaction. In addition, all service dimensions have a significant impact on user satisfaction except "responsiveness". Thus, Hypothesis 1 was supported.

One objective for the study is to reveal whether there is a significant difference of users' importance on service dimensions between users having different characteristics. Multivariate ANOVA tests were applied, indicating no significant difference. A highly consistency of importance of users is revealed. Hence, Hypothesis 2 and 3 was not supported by the research results. Other than the examinations mentioned above, the study sorted the service attributes by their importance. For all users, top 5 service attributes that gained more attentions are: a sufficient number of books, loan and return services, overall reading atmosphere, a well system of electronic data, and on-line reservations and continuing loan services on line. Moreover, based on the suggestions from users, they think CJCU Library needs to improve the following issues:

(1) The lighting is not sufficient.

(2) Computer facilities need to be improved.

(3) The seats are not enough.

(4) Reading environment is not maintained well.

(5) The collections are not sufficient, especially foreign books.

(6) The number of magazines is not sufficient.

(7) Databases with full text are not enough.

(8) The number of videos in labs is not sufficient. The materials are not open for external loans.

(9) The opening hours are too short.

(10) Some users smoke in the rest rooms in the library, which needs to be improved.

To sum up, top four issues requiring improvement are mainly related with library environment and facilities. Users not only need library facilities to be maintained well, but also ask for a quiet reading environment without any disturbance. Therefore, top management of CJCU Library is suggested to augment its announcement and urge library staff to maintain good orders in the library. For item 5 to 8, they are mainly concerning about library collections. So, we suggest that the library purchase more books or magazines under the resource allocation of the library. Moreover, some users think that the open hours are too short that need to be further discussed in the future.

The present study employed user questionnaire survey, focusing on investigating general service quality of CJCU Library. In fact, the customers of any service organization include both external and internal customers, who are library users and library staff respectively. The study only focused on users but ignored the thoughts and perceptions of library staff toward CJCU Library. So, we suggest future researches to include internal customers as key objects for study. In addition, all libraries were evaluated regularly, with an attempt to see if the manpower, resources, and so forth are effective or not. Hence, regular assessments of libraries are suggested to be included in the research scope, trying to reveal the differences between the results from regular assessments and those from user questionnaire survey. As a result, we will be able to comprehend whether users' expected service quality can link up with library managers' perceived service quality or not.

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