sures suggested by the SERVQUAL perspective, the authors introduce an alternate framework, with its attendant measures, that attempts to explain overall library user satisfaction. Although the authors believe that overall satisfaction can be influenced by several of the SERVQUAL dimensions, other factors also were deemed pertinent to their framework. These factors were deduced from in-depth interviews with library users. The conceptual framework and its related propositions are outlined below, followed first by an explanation of the research method and then the analyses, results, and discussions.

Conceptual Framework and Propositions

A library's resources are critical to user satisfaction. However, no library can satisfy all its users all the time. Some libraries have very limited resources and clearly are unable to satisfy their users, whereas others are large in size, have substantial holdings, and can provide a variety of services. Obviously, those libraries that are able to provide users with whatever they want will achieve higher levels of user satisfaction. Thus, the availability of resources can have a significant influence on user satisfaction. It is important to note, however, that the *quality* of the resources may be judged from an overall perception as to whether the library can provide access to materials (e.g., through interlibrary loans or other document delivery services) when and where needed. It is this overall perception of a library's resources that contributes to user satisfaction. Thus, the authors propose that:

P₁: The higher the perceived quality of the library's resources, the greater the level of user satisfaction.

The SERVQUAL literature identifies *responsiveness* as an important element of service quality. It is defined as the willingness of the staff to be helpful and to provide prompt services. At academic libraries, users expect that the library staff will attend to their needs quickly and efficiently. Promptness, therefore, can be critical to users' perceptions of responsiveness. Helpfulness, identified in the literature as a component of responsiveness, finds its place in another factor the authors have termed *demeanor* (which is

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> **Promptness, therefore, can be critical to users' perceptions of responsiveness.**

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subsequently addressed). The authors' measures of responsiveness also are somewhat different from those in the original SERVQUAL scale and focus on promptness. These measures address waiting time, availability of the staff to help users when needed, and whether the staff quickly make sure that users have what they need. The authors also propose that:

P₂: The greater the responsiveness of the library staff, the greater the level of satisfaction among academic library users.

Another expectation among library users is that of competent services. In the context of academic libraries, as in other libraries, users want the staff to be knowledgeable and to be able to assist them in locating needed materials and information quickly and efficiently. When users perceive that the library staff are competent, they will feel assured that problems will be easily resolved, leading to greater satisfaction with the services.

Although competence was proposed as a separate service quality dimension in the original conceptualization by Parasuraman, Zeithaml, and Berry,[21] subsequent empirical results suggested that the measures should depict reliability. Thus, competence was not considered a separate dimension in the SERVQUAL framework. At the same time, several items in the proposed reliability scale, such as accuracy in billing, keeping records correctly, etc., as proposed by Parasuraman, Berry, and Zeithaml,[22] did not, in the authors' opinion, fit the aca-

demic library setting because library users generally would be unable to assess these elements. Hence, these items were not included in the authors' study. Moreover, because competent services was identified as important to customer satisfaction, the authors chose to retain this construct, using four alternative items to measure it. *Competent services* focused on the library staff being good at explaining how materials are arranged, their knowledge, their ability to answer questions appropriately, and their ensuring that all questions are answered. The authors propose that:

P_3: The greater the perceived competence of the library staff, the greater the level of user satisfaction.

The general demeanor of library staff, as perceived by library users, also can have a significant impact on user satisfaction. Users look for staff who are friendly and approachable, but not unnecessarily intrusive. Several aspects of staff demeanor seemed to overlap two factors—assurance and empathy—proposed in the SERVQUAL framework. However, some modifications were necessary to represent the demeanor construct clearly. For example, two items of the assurance dimension in the original scale did not seem to be critical to the library setting. These items included feeling safe in the transaction with library staff and the extent to which library staff instilled confidence in customers. Another item—employees have the knowledge to answer your questions—seemed to belong more appropriately to the group of items representing competence. Nitecki also showed how these and other SERVQUAL items were inappropriate for the academic library setting.[23] Consequently, the authors introduced the construct "demeanor," which included items from empathy and assurance, in addition to several new items. The construct is depicted by staff sensitivity to user needs, willingness to listen to user problems, being polite, being courteous, and being

sympathetic and reassuring. The authors also propose that:

P_4: The more positive the demeanor of the library staff, the greater the level of user satisfaction.

Physical or "tangible" evidence that the library will be able to provide satisfactory services has been shown to be a component of service quality. The authors' investigations suggested that this factor can influence user satisfaction judgments. The items used to delineate this construct included overall cleanliness of the facilities, visually appealing environment, and appearance of the staff. The authors propose that:

P_5: The better the perceived overall physical appearance of the library facilities, the greater the level of user satisfaction.

Research Method
Research Design
The authors first explored secondary sources to assess the type of research conducted on library service quality and related issues. The next stage involved gathering information directly from users of academic libraries. This was accomplished in two steps. The first step involved exploratory in-depth research. Interviews were conducted with a small, but representative, sample of conveniently chosen library users. Participants responded to open-ended questions. The in-depth nature of the interviews permitted exploring the diverse issues while narrowing the factors down to several important ones that seemed to best explain user satisfaction with library services. The next step involved designing and pretesting a questionnaire that was administered to ten respondents, again chosen conveniently, from a cross section of college students familiar with their academic libraries. The pretest was instrumental in assessing the strengths and weaknesses of the questionnaire and in ensuring that all pertinent variables were included. At this stage, several modifications were

made to the instrument to remove ambiguities and to improve the flow of the questions. The final version was administered to a representative sample of college students.

Measurement

The questionnaire included perceptual measures that were rated on seven-point Likert scale items. This design is consistent with prior studies on service quality. Each scale item was anchored at the numeral 1 with the verbal statement "strongly disagree" and at the numeral 7 with the verbal statement "strongly agree." Multiple items were used to measure each construct so that their measurement properties (i.e., reliability and validity) could be evaluated. The scale items measuring the dependent variable were selected to reflect people's overall satisfaction with services received. Demographic data also were obtained from the respondents.

It is important to note that the authors did not use the gap score approach (used in many service quality studies) that uses the difference between expectations and performance because of the problems discussed earlier. In particular, because expectations from excellent libraries will be high, these scores generally will be high and will demonstrate little variation. Hence, most of the variation in the data will be introduced by the performance scores. Thus, the authors focused on performance measures alone. This also helped the authors to keep the instrument simple. Moreover, this approach is consistent with other studies.[24, 25]

Sampling

The sample was drawn from three academic libraries in Erie, Pennsylvania. These included the Behrend College Library, the Nash Library of Gannon University, and the Hammermill Library of Mercyhurst College. The population was defined as students from these three colleges only. Questionnaires were delivered personally to respondents as they entered the library. The purpose of the study was briefly, but adequately, explained at that time. Respondent anonymity was ensured by asking them not to identify themselves anywhere in the survey. In addition, respondents were asked to return the completed surveys to a box located at the circulation desk of each library.

The sample was chosen using systematic sampling. A total of 210 questionnaires were distributed. Of these, 188

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questionnaires were completed and returned, resulting in a response rate of 89.5 percent. The survey was conducted over a period of one year and included data from three semesters—spring, summer, and fall of 1996. A one-year time frame allowed researchers to include the views of a large cross section of library users regarding the services they received on a range of needs. Moreover, survey instruments were distributed at different times each semester so that user views would reflect different demand conditions. The sample demographics indicated that a broad cross section of the population responded.

Analyses

Table 1 contains summary statistics, as well as the matrix of zero-order correlations for the variables included in this study. The reliability of each multiple-item scale was assessed by coefficient alpha. These values are indicated in the diagonal of table 1. Multiple-regression analysis was used to test the propositions.

Reliability

Reliability analyses indicated that the

TABLE 1
Descriptive Statistics Zero-order Correlations and Reliability Coefficients

Variables	1	2	3	4	5	6	7	$\overline{x}$	s
Satisfaction (4)	*.91*							5.12	1.25
Responsiveness (3)	.33	*.75*						5.05	1.31
Competence (4)	.54	.51	*.91*					5.64	1.07
Demeanor (5)	.58	.56	.78	*.92*				5.30	1.20
Resources (4)	.71	.15*	.33	.33	*.76*			3.73	1.23
Tangibles (2)	.36	.38	.41	.44	.19	*.62*		5.80	1.11
Assurance (9)†	.60	.57	–	–	.35	.45	*.89*	5.50	1.07

Figures in italics represent reliability coefficients.
Figures in parenthesis indicate number of items measuring each construct.
* $p < .05$; all other coefficients $p < .01$.
† Assurance reflects a combination of competence and demeanor items.

internal consistency of the six constructs in the study was reasonable. The dependent variable exceeded Jum C. Nunnally's recommended value of .70.[26] With the exception of the measure of "tangibles" (alpha = .62), the reliability values of the other constructs were relatively high and considered to be very good.

Validity

Several methods were used to assess validity. The results in table 1 provide support for discriminant validity because the correlation between one scale and another is not as high as each scale's coefficient alpha.[27, 28] Factor analysis with varimax rotation also was conducted to examine whether the measures loaded as expected on the selected constructs. When no constraints were imposed on the extraction of factors, only four factors were recovered (see table 2). In this four-dimensional structure, the measures of demeanor and competence loaded together on the first factor; the other measures loaded, as expected, on three additional factors represented by responsiveness, resources, and tangibles. The authors also note that the scale item regarding

TABLE 2
Unconstrained Factor Analysis of Independent Variables With Varimax Rotation

Items	Factor 1	Factor 2	Factor 3	Factor 4
ASRNC-3	**.874**	.10	.10	.14
ASRNC-9	**.842**	.08	.24	.14
ASRNC-4	**.827**	.17	.13	.09
ASRNC-8	**.818**	.19	.12	.21
ASRNC-2	**.811**	.09	.23	.09
ASRNC-7	**.771**	.05	.14	.07
ASRNC-1	**.748**	.16	.13	.05
ASRNC-6	**.705**	.16	.24	.27
ASRNC-5	**.704**	.08	.29	.24
RES-1	.23	**.818**	.09	.07
RES-2	.28	**.738**	-.09	.03
RES-4	-.08	**.703**	.20	-.31
RES-3	.09	**.684**	-.01	.39
RESP-2	.34	-.04	**.799**	.11
RESP-3	.02	.22	**.794**	.15
RESP-1	.51	-.04	**.535**	.01
TAN-2	.11	.15	.19	**.83**
TAN-1	.37	-.11	.06	**.68**
Eigenvalues	7.93	2.06	1.25	1.19
Variation	44.1%	11.5%	7.0%	6.6%
Cumulative	44.1%	55.6%	62.5%	69.1%

TABLE 3
Factor Analysis of Independent Variables With Varimax Rotation
(extraction constrained to five factors)

Items	Factor 1 Demeanor	Factor 2 Competence	Factor 3 Resources	Factor 4 Responsiveness	Factor 5 Tangibles
DEM-4	**.788**	.38	.19	.12	.02
DEM-3	**.757**	.39	.11	.23	.03
DEM-5	**.753**	.46	.10	.25	.08
DEM-2	**.684**	.32	.10	.29	.19
DEM-1	**.639**	.37	.17	.25	.22
COMP-3	.42	**.810**	.09	.15	.12
COMP-2	.29	**.788**	.04	.20	.07
COMP-1	.31	**.734**	.16	.18	.05
COMP-4	.45	**.707**	.18	.16	.19
RES-1	.07	.24	**.812**	.11	.10
RES-2	.26	.13	**.747**	-.09	.03
RES-3	.03	-.19	**.724**	.18	-.29
RES-4	-.01	.17	**.661**	.01	.43
RESP-3	-.09	-.17	-.21	**-.808**	-.16
RESP-2	-.30	-.15	.04	**-.802**	-.09
RESP-1	-.35	-.34	.04	**-.553**	.01
TAN-2	.08	.13	.11	.20	**.843**
TAN-1	.55	.03	-.11	.04	**.622**
Eigenvalues	7.93	2.06	1.25	1.19	.81
Variation	44.1%	11.5%	7.0%	6.6%	4.5%
Cumulative	44.1%	55.6%	62.5%	69.1%	73.6%

the appearance of the staff loaded with the first factor and not, as expected, with measures of tangibles. Attributing this to measurement error, the authors eliminated the item. This resulted in a cleaner factor structure, with items loading on the expected factors.

When the factor analysis procedure was constrained to extracting five factors, the scale items loaded, as expected, on demeanor, competence, resources, responsiveness, and tangibles (see table 3). However, the latent root criterion indicated that the "tangibles" factor had an eigenvalue of less than one. (In factor analysis, only factors having latent roots [eigenvalues] greater than one are considered significant. However, when the eigenvalue for a factor is close to one, the factor might be retained for inclusion in the model.[29]) After carefully assessing the measures that loaded on the first unconstrained factor (i.e., the items measuring demeanor and competence), the authors termed the factor "assurance" because when positive attitudes (such as demeanor) are combined with competent assistance, it gives users a sense of assurance that their needs will be addressed and met appropriately.

Results

Multiple-regression analysis was conducted using both the four-factor and five-factor structures to test the propositions. The results are presented in tables 4 and 5.

The full model was significant for both the four- and five-factor models as indi-

TABLE 4
Regression Results with Four Factors
(Dependent Variable: Satisfaction)

Independent Variables	b	s.e.	ß	p <
Assurance*	.428	.070	.366	.001
Resources	.584	.048	.567	.001
Responsiveness	-.003	-.054	-.003	.95 n.s.
Tangibles	.099	.056	.089	.10
Constant	.022			

$R^2 = .65$
adj $R^2 = .64$
$F_{4,181} = 85.01$, p < .001
* Combination of Demeanor and Competence

cated by the overall F statistic (p < .001). Both regression models explained about 64 percent of the variation in the dependent variable as indicated by the adjusted R^2 values. It may be noted from table 4 that three of the four factors had a significant effect on user satisfaction. The significant explanatory factors included: assurance (b = .428; p < .001); resources (b = .584; p < .001); and tangibles (b = .099; p < .10). Responsiveness had no effect on user satisfaction.

The results based on the five-factor model are reported in table 5. Here again, three factors were significant: demeanor (b = .287; p < .001); resources (b = .588; p < .001); and tangibles (b = .098; p < .10). Competence, when isolated as a separate

factor, would be regarded as significant only if the possibility of making a Type-I error 15 percent of the time is allowed. In the research community, such an allowance generally is not made; consequently, the nonsignificance of the variable may be attributed to multicollinearity as suggested by the high correlation between demeanor and competence (r = .78; p < .001). Alternatively, because library users actually may see competence and demeanor as elements of one large factor (i.e., assurance), perhaps the two constructs should be combined (as in tables 2 and 4).

An examination of the parameter estimates (especially the standardized beta values) suggests that the availability of resources and the assurance provided by the library staff have the greatest impact on user satisfaction. Although the third significant variable, tangibles, also had an impact on the dependent variable, its magnitude was relatively small.

Discussion

This study tested an alternative model of customer satisfaction with academic libraries. Although no attempt was made at replication, the authors borrowed from earlier studies, relying to a great extent on the service quality literature. Departures from the original SERVQUAL framework were predicated by studies that suggested the inapplicability of the framework to all service situations.

The results of this study suggest that academic librarians focus on two major elements (based on the standardized betas)—resources and demeanor—if providing customer satisfaction is to be underscored in their strate-

TABLE 5
Regression Results with Five Factors
(Dependent Variable: Satisfaction)

Independent Variables	b	s.e.	ß	p <
Demeanor	.287	.078	.278	.001
Competence	.125	.084	.107	.15 n.s.
Resources	.588	.048	.570	.001
Responsiveness	.004	.054	.004	.95 n.s.
Tangibles	.098	.055	.088	.10
Constant	.144			

$R^2 = .65$
adj $R^2 = .64$
$F_{5,180} = 67.80$, p < .001.

the SERVQUAL literature. For example, Parasuraman, Berry, and Zeithaml suggest that competence is important to some, but not all, services.[30] They show that being competent is a principal expectation among customers of automobile repair and equipment repair but is not as important to customers of automobile insurance, hotels, and rental services. The authors believe that receiving competent service is important to library users. However, when it is provided, it may not be noticed. On the other hand, when sloppy and incompetent services prevail, customers will notice and their satisfaction will be attenuated.

Tangibles also play a role in explaining user satisfaction, but their impact is considerably lower than the impact of the other significant variables. However, the physical condition of the library and the facilities within it that meet the eye must be managed so that negative impressions are not conveyed.

Curiously, although in-depth interviews suggested otherwise, staff responsiveness did not have a significant effect on customer satisfaction as shown by the regression coefficients and the probabilities of rejecting a true null hypothesis. Perhaps responsiveness also works through some mediating variable to explain customer satisfaction that should be explored in future research. Alternatively, perhaps, the authors' measures of responsiveness may be tapping the domain of some other theoretical construct that is not directly related to user satisfaction and should be explored in future studies.

The independent variables explained 64 percent of the variation in the criterion variable and suggests that the authors' proposed model has considerable value; this also underscores that library service providers should be cognizant of two very important variables—demeanor or assurance, and resources—that must be considered in their strategic vision to enhance library services.

On the measurement of the constructs, the authors note that the coefficient alpha values were reasonably high; the items also demonstrated discriminant validity. The correlations between the independent variables indicate, possibly, the existence of multicollinearity, although R. S. Billings and P. S. Wroten suggest that correlation coefficients lower than .8 do not indicate serious multicollinearity problems.[31]

The response rate (89.5%) also was reassuring, reducing the problems introduced by nonresponse bias. This was achieved by personally delivering the surveys to be self-administered and assuring respondents of confidentiality. In addition, the letterhead of a very credible educational institution was used to convey that the study represented institutional research. In addition, respondents were informed that key results were expected to be made public. The above considerations may explain the reasonably high percentage of responses without follow-up.

Future research may attempt to replicate the findings, which, if corroborated, would suggest that the constructs and measures developed in this study are useful in the academic library setting. The applicability of the measures to public and special libraries also could be investigated and the importance of the explanatory variables examined. Repeated over time, such research should help identify the key factors that explain user satisfaction across different types of libraries. Strategic measures should follow to serve user needs better.

The user-based model developed and presented in this paper supports and strengthens the need to provide high-quality services to academic library users. The need to provide such services is based not just on what the customers want but also on the experience of many library professionals who have long known about these needs. In fact, many library and information professionals have considerable experience to judge what customers are able to say about what they want.[32] What is needed is a delicate balance between what the users need and the tried ex-