Usage of Academic Libraries: The Role of Service Quality, Resources, and User Characteristics

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ABSTRACT
COMPETITIVE PRESSURES FROM DIFFERENT INFORMATION providers; widely available information resources; rising costs of books, serials, and electronic resources; and emerging new technologies and services providing information to potential library users raise questions about the role of academic libraries in present times. There has been some deliberation about the necessity to better understand and define the needs and expectations of library users to provide the appropriate kind and levels of service to provide satisfaction and service quality. But whether satisfaction with services is likely to explain the use of actual facilities is a moot question—i.e., the link between user satisfaction and usage of the brick and mortar facilities may be tenuous. This study proposes and tests a model to explain the use of academic libraries. The explanatory factors include service quality factors, resources, and user characteristics. Students in three academic libraries were surveyed in Erie, Pennsylvania, over a period of three semesters. Of the 210 questionnaires that were distributed, 188 were returned. The model was significant and explained some of the variation in library usage.

INTRODUCTION
The academic library has been described as the "heart" of the learning community, providing a place for students and faculty to do their re-

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search and advance their knowledge. The librarians and library staff provide numerous services to these users, addressing their diverse needs, characteristics, and interests.

However, with the advent of online catalogs, CD-ROMs, online databases, other electronic resources, new methods of document delivery, and access to information, the role of the academic library has begun to change. Students do not have to be physically present in the library in order to access the library's resources. With the Internet and the availability of new technologies and numerous indexes, abstracts, and databases, the range of services that academic libraries can provide has increased dramatically. Users can access the libraries' resources without stepping into the library building. They can also very easily access other libraries' resources, such as online catalogs and unrestricted databases. The Internet has opened the resources of libraries to students and faculty worldwide.

The new technologies and electronic resources available today raise the question whether the library as a place has become a dinosaur. Do users need a physical library if almost everything can be accessed electronically? Are students still using libraries the way they are supposed to use them? How many students actually still use the library and why? And consequently, should librarians play a different role from what they have always played, especially if libraries are becoming mere data warehouses? In fact, many librarians today do not exactly know their users because of the changes introduced by technological advancements. It was easier when library users walked through the doors of the library, and the library staff could actually take some sort of count of these users. The library staff was also able to develop a library-user relationship with some of the users. Today it is far more difficult to say for certain how many of their students actually visit the physical library to use the resources. It is also difficult to estimate how many utilize the services and expertise of the library staff in the library building.

With emphasis being placed on electronic resources, and users being more interested in access rather than actual ownership, libraries are facing greater competition from many sources like bookstores and information from publishers and vendors who try to provide some of the same services that libraries provide. These competitors sometimes provide their services faster and more efficiently, while virtual libraries are easily available through the Internet. Some students also seem to know more about other libraries than their own institutions' libraries.

By providing quality services and satisfaction to users, academic and research librarians can distinguish their services through friendly, helpful, and knowledgeable advice and the best technological resources available. Because academic library users have varying needs and expectations, it is the responsibility of the library staff to know these needs and expectations and strive to meet them. In this regard, Millson-Martula and Menon

(1995) maintain that one of the elements of quality service is when users' personal needs and expectations are incorporated into the development of programs and services of libraries. Whether this will lead to greater usage of library facilities is, however, unclear given the options available to the users. This research, therefore, addresses the usage of academic libraries. In particular, it addresses the role of service quality and other factors offered by an academic library to explain library usage.

LITERATURE REVIEW

Much has been written about access and ownership, but there has not been very much written about the factors that influence students actually to use libraries. Some of the library and information science literature examines library usage and academic success. Other researchers examine library use and instruction, while still others discuss library skills, usage, and grade point average.

Studies focusing specifically on usage of libraries by students are few. Jennifer Wells (1995) states that, "the effectiveness of libraries has often been measured by the volume of library materials available to clients, the amount of use of services and resources, and the apparent or quantified satisfaction of clients. Very little research has taken into account the objectives of the clients" (p. 121). Wells's article deals mostly with library usage of undergraduate students and their academic achievements. She examines the number of times each student visited the library and whether there was any correlation between the library visit, the grades achieved, and the diversity of resources the student used in the library. Her study does not ask the students why they use the library, but what resources and services they used in the library, and the impact these had on their academic success.

Other sources discuss library use by different categories of students. According to Onwuegbuzie and Jiao (1997), "libraries represent one area in which international students have to adjust. The previous library experiences of these students is a critical determinant of how much adjustment to the United States library system is needed" (pp. 258-59). Some of the reasons why international students used the library include: studying for tests, reading books on reserve, checking out books, using computerized indexes and online facilities, and meeting friends. These library usage characteristics of international students are also pertinent to other students.

Providing quality services in academic libraries is now a major issue among academic librarians; they see the library more in terms of the provision of and access to service quality than as just a physical place. Technology and automation have also changed the way people perceive libraries. As a result, the role of libraries and librarians is also changing. Librarians themselves have been re-evaluating their role as reflected in many

discussions and papers. They emphasize the provision of good library service as more important to the user than the mere physical library building. This perspective is evident in several recent studies (Edwards & Browne, 1995; White & Abels, 1995; Hernon & Calvert, 1996; Nitecki, 1996; Coleman et al., 1997). Access to information provided by libraries is seen as more important than the materials physically available in a library. According to Birdsall (1994): "The electronic library operates within an electronic collaborative environment with an emphasis on access to information regardless of its location" (p. 41).

Andaleeb and Simmonds (1998) identified several factors that influenced user satisfaction; these factors included responsiveness, competence and assurance (which translated to demeanor), tangibles, and resources. However, they did not investigate whether quality services leads to increased usage of the library itself. This study examines whether, and the extent to which, service quality factors along with resources and user characteristics affect library usage.

RESEARCH DATA AND CONSTRUCTS

This article is based on data collected earlier for a different study (Andaleeb & Simmonds, 1998) in which the researchers examined the relationship between library service quality factors and user satisfaction. While this study is based on the same data set, it explores the links between service quality factors, resources, and user characteristics to library usage. Library usage is defined as users' beliefs about the extent to which they use library facilities. It was measured on seven-point Likert scales using two items: "I use my library a great deal" and "I spend a lot of time at the library." The coefficient alpha of the two-item scale was .83. The other constructs and their measures were retained from the earlier study (see Andaleeb & Simmonds, 1998).

RESEARCH METHODOLOGY

The researchers first consulted secondary literature to find out what had been written on library service quality and user satisfaction. Information was also directly gathered from people who used the library during the research period. People were interviewed in depth about their perceptions of library service. Participants taking part in this pre-study were presented with open-ended questions, which allowed them to express their opinions fully. Since the interviews with these participants were thorough, the researchers were able to explore "the diverse issues while narrowing the factors down to several important ones that seemed to best explain user satisfaction with library service" (Andaleeb & Simmonds, 1998, p. 159).

A questionnaire was designed, pre-tested, and then administered to approximately ten respondents using the services of the library at that time. The feedback enabled the researchers to improve questions relevant

to the study. The survey was revised based on the information provided by the participants in the pretest. Questions which were unclear or ambiguous to the respondents were eliminated, and the final version was distributed to the students.

Sampling

A total of approximately 210 questionnaires were distributed to all the participants using systematic sampling; 188 were returned. The survey was personally distributed by the researchers to student users who were physically in the library building at the time of the study. The survey was conducted over a period of one year and included data collected from spring, summer, and fall semesters. The demographic profile of the respondents is presented in Table 1. The response rate (89.5 percent) of the study was high. Respondents were assured of confidentiality. Furthermore, the letterhead of a very credible educational institution was used to assure respondents that the study represented institutional research. Respondents were also informed that key results would be made public. The above considerations may explain the reasonably high percentage of responses without follow-up.

Results

Multiple regression analysis was conducted using the five-factor structure used in the previous study and two additional variables—familiarity with the library and gender. While the full model was significant, not all independent variables were significant (see Table 2).

A restricted model was thus run with an F-statistic of 10.80 ($p < .001$). The restricted model explained about 17 percent of the variation in the dependent variables as indicated by the R^2 value (see Table 3). It may be noted from Table 3 that each of the independent variables in the restricted model had a significant effect on library usage. Interestingly, only one of the service factors—tangibles—had a significant effect on library usage. There was also a marginal effect on the gender dummy variable with a 10 percent probability of making a Type I error (i.e., rejecting a true null hypothesis of no effect). This finding suggests that females use the library marginally more than males. Resources and familiarity with the library were also significant explanatory variables. An examination of the parameter estimates (especially the standardized beta values) suggests that one's familiarity with the library had the greatest impact on library use, followed by resources, tangibles, and gender.

DISCUSSION

This discussion suggests that the use of academic libraries is influenced most by a user's perceived familiarity with the library and its resources; those who are more familiar with the library are more likely to use academic libraries. If library usage is to be increased, it is important

Table 1. Demographic Profile of Respondents.

Demographics	Frequency	Percentage
Sex		
Male	91	48.4
Female	90	47.9
NA	07	3.7
Age		
Under 20	60	31.9
20-24	91	48.4
25-29	17	9.0
30-34	04	2.1
35-39	05	2.7
40+	05	2.7
NA	06	3.2
Educational Level		
Freshmen	37	19.7
Sophomore	36	19.1
Junior	53	28.2
Senior	41	21.8
Graduate	14	7.4
Other	01	.5
NA	06	3.2
Majors		
Business	47	25.0
Science & Engineering	43	22.9
Humanities & Social Sciences	85	45.2
NA	13	6.9

that libraries find ways to familiarize users with the library. This might involve ongoing training as well as access to helpful and knowledgeable library staff. There is also the need for librarians to make sure that users know how to use library resources not only in the confines of the library building, but even when they access the resources remotely. Many students are now accessing library online catalogs and electronic resources remotely from their dormitory rooms, computer laboratories, home computers and, for some adult students, workplace computers. Even with basic library instruction, many users find it difficult to comprehend and manipulate the many complexities of information research. Many instruction librarians are aware of how easily users forget what is shown to them after the basic library instruction class. Whatever is taught to users in

Table 2. Regression Analysis: Full Model (Dependent Variable: Library Usage).

Independent Variables	b	s.e.	B	p<
Tangibles	.179	.092	.138	.ns
Resources	.305	.131	.171	.05
Familiarity	.255	.089	.205	.01
Gender	.325	.174	.129	.1
Responsiveness	-.059	.100	-.052	ns
Demeanor	-.057	.142	.048	ns
Competence	.029	.156	-.022	ns
Constant	.022			

$R^2 = .172$

$F\ 7_{,178} = 5.28,\ p < .001$

Table 3. Regression Results of Restricted Model (Dependent Variable: Library Usage).

Independent Variables	b	s.e.	B	p<
Resources	.305	.131	.171	.05
Familiarity	.255	.089	.205	.01
Tangibles	.179	.092	.138	.05
Gender	.325	.174	.129	.1
Constant	.022			

$R^2 = .17$

$F_{4,182} = 9.07,\ p < .001$

orientation or course-related instruction sessions has to be reinforced with other effective search techniques to make it easier for them to utilize those techniques when they are working independently away from the library environment.

Emphasis on instruction and knowledge on how to use these resources can help to increase library usage and also to enable them to evaluate more effectively the resources they find when they do research. Academic librarians often hear users say, "everything can be found on the Web." It is frustrating to try to explain to users that not everything can be found on the Internet that is research-worthy. Librarians should teach users how to

learn to distinguish between materials found on the Internet using typical search engines, such as Yahoo, Google, etc., and materials which libraries have purchased from vendors, but which can be accessed through the Web. Instruction on how to critically evaluate both print and electronic resources would also help users appreciate the multitude of sources currently available for research, and increase user satisfaction with academic libraries.

In addition to familiarity, it is also important to note that the perceived quality of the library's resources is a key variable explaining library usage. Because academic library users frequent their libraries to find solutions to their academic problems and needs, it is imperative that libraries have the right kinds of resources available; otherwise, users will go somewhere else. In today's changing environment, resources mean much more than the size of the library's collections. Access to resources may in fact be seen as vital to judging resource adequacy. Consequently, academic librarians must monitor the needs of the academic environment by remaining networked into their academic institution's curriculum, resource needs of teachers, student preference for how needed information is packaged (i.e., CD-ROMS, journals, microfiche, audio visuals, Internet, etc.), and related administrative use of information (i.e., career planning and development, and so on). By focusing on needed resources and delivering what users want, librarians can play a proactive role by developing a variety of resource access options for the users that meet cost and efficacy criteria.

The findings also suggest that library usage is influenced by tangibles— a clean and visually appealing library. Clearly, the physical appearance of the library must be made appealing to bring users to the facilities. This finding also suggests the need for additional studies that explore what constitutes "visual appeal." The findings should provide input to designers and refurbishers about architectural layout, color tones, amenities, and so on that enhance visual appeal. Some users in academic institutions find it extremely difficult to study or do any significant research in their dormitories. Many of them have problems with roommates, loud noises in their rooms, and so on. For them, and others in similar situations, the library is more conducive to research and studying. Some adult students in particular welcome the atmosphere of the academic library, which acts as a solace from their busy lives in the workplace, family lives, and other nonacademic obligations. Consequently, the library environment must be appealing to all users.

Curiously, responsiveness, competence, and demeanor of the staff did not have significant effects on library usage as indicated by the significance tests in the full model. Perhaps these variables work through other mediating variables to explain library usage.

The explanatory variables in the restricted model explained about 17 percent of the variation in the criterion variable. This is a clear indication

for additional research to identify other important variables explaining library usage. However, the model does suggest that librarians should focus on the significant variables until further studies are conducted and additional important variables are discovered.

To follow up on the low coefficient of determination, the correlations between the independent variables were examined for multicollinearity. These coefficients were low. Moreover, the high tolerance values (.852-.966) and the low values of the Variance Inflation Factors also indicated the near absence of multicollinearity. These assessments provide further indication that there are other variables, not included in our model, which should add to our understanding of library usage. Perhaps access to the Internet is a significant variable: those who do not have access are more likely to use the library while those who do might prefer to access information directly from their computers. Another factor that we hypothesize is perhaps the cost of access to information. If electronic access to needed materials represents a significant cost (either because of costs of going online or because of charges that are directly proportional to the amount of information requested), library usage may be greater. These conjectures must be tested in future research. If academic librarians are interested in producing lifelong learning through instruction on how to use library resources, then they must actively examine the needs and expectations of library users and aim to fulfill these.

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