

MODELLING STUDENT'S SATISFACTION WITH LIBRARY SERVICES IN A TERTIARY INSTITUTIONS: EVIDENCE FROM KUMASI POLYTECHNIC

Kofi A. Ababio[a,6], Eric N. Aidoo[b], Thomas Korankye[c], Bashiru I.I. Saeed[a], Munyakazi Louis[a,7], Nicholas N.N.N. Nsowah-Nuamah[c,2]

[a]Department of Mathematics and Statistics, Kumasi Polytechnic, Ghana

[b]CSIR-Building and Road Research Institute, Ghana

[c]Rector of the Kumasi Polytechnic, Ghana

[c]Institute of Entrepreneurship and Enterprise Development, Kumasi Polytechnic, Ghana.

Abstract

An effective and efficient academic library system can significantly contribute to student and other user's development in a wider perspective. This paper seeks to determine the satisfaction level of students with respect to the available reading materials and the services provided by the school library officials. Using a survey data obtained from students using the Kumasi Polytechnic library, the overall service satisfaction model was specified using ordinal logistic regression. Among the sampled students, 57%, 30.8%, 6.7% and 4.3% of them believes that the overall service quality is good, moderate, excellent and poor respectively. Also from the estimated model, the overall service quality decreases when students are less satisfied with the individual service components. In general, the estimated model suggest that among all the variables, availability of current and relevant materials; adequate user instructions; reliable internet facilities as well as friendly and helpful library staff are the first four (4) library service segments that highly influenced the students ratings for overall service quality.

Keywords: Ghana, Kumasi Polytechnic, Library Services, Student Satisfaction, Ordinal logit model.

1. INTRODUCTION

A vibrant academic library is considered as an important component of any high quality academic institution to serve lecturers, students as well as other researchers. According to Kotso (2010), libraries support research process by collecting, preserving and making available an array of information resources relevant to their research community. Kumasi Polytechnic unlike any other tertiary institution strives to maintain a high standard library to augment the academic needs of its users. An effective and efficient academic library system can significantly contribute to student and other users' development in a wider perspective. Nwalo (2003) describe the effectiveness of a library as how well the library meets the users' needs relative to the library's goals and objectives. A survey by Jubb and Green (2007) observe that academic libraries have for centuries played vital roles in supporting research in all subjects and disciplines within their host campuses. Academic library form part of the main components of every institution and hence if under resource, it will undermine the very purposes of the institution (Khan and Zaidi, 2011). Pritchard (1996) stated that academic libraries are not separate units but part of the institution and their quality must be determined by their relationship with the outcomes that are

[6] Corresponding author, Email Address: kaababs@gmail.com
[7] Professor in Statistics at Kumasi Polytechnic

important to the college or university. Ford (1986) describe library to be a stimulating place for some students but might not be the case for others.

Users of academic library have many reasons for using the facility. For instance, a study conducted by Okiy (2000) on students and faculty use of academic libraries in Delta State University in Nigeria found that respondents used books more than other materials. In a similar fashion, Ugah (2007) also found out that textbooks usage account for most reasons for library visits. Users of academic library are not limited to the use of its various resources; the need for librarians to encourage and educate users on the effective use of the facility is eminent. Popoola (2001) observes that information availability does not mean accessibility and use, and that academic libraries should stimulate primary demand for their products and services. Mason (2010) also shares the same opinion and suggests that librarians must be sympathetic and helpful to all students and that students must be aware that librarians and faculty members are there to instruct and encourage their intellectual odyssey and should be seen as facilitators. An under resource library will therefore not serve its cardinal purposes and hence undermine effective academic work. This phenomenon exposes library user perception about this academic provision. This brings forth the measurement of expectations against reality: of actual service provision, as opposed to perceptions of that provision. Library user's expectation is very critical in improving the academic facility to suit its general expectations. However a negative perception of library provision vis-à-vis the actual service is as a result of lack of continuous research into user satisfaction surveys.

Evaluation of the quality of library services has been studied in many academic institutions in the world. For instance, Lapidus (2003) assessed the perspective on library services for Pharmacy and Health Science students in Massachusetts College of Pharmacy and Health Sciences in Boston, USA. The study showed that 80% of the respondents expressed satisfaction with library services, instruction, collections, and facilities. Portmann and Roush (2004) assessed the effects of library instruction. Their study found that library instructions significantly increase student library use but non-significant increase in library skill development.

Quality assurance demands that, libraries from time to time, need to be assessed and evaluated by its users. The users' satisfaction is considered to be a reliable benchmark for determining library effectiveness. Users' information needs are met in an effective way by providing standard but suitable library services that they need. Users' assessment can provide invaluable information to libraries in re-orienting their collections, services and activities for effectively meeting their information needs (Eager and Oppenheim, 1996; Fidzani, 1998). Periodic collection assessment is necessary to determine to what extent library collections are relevant, current and adequate in meeting the information needs of users (Osburn, 1992).

This paper seeks to determine the satisfaction levels amongst students in Kumasi Polytechnic with the various services provided by the library. In other to determine the significant factors that influence overall student satisfaction, the study employs an ordinal logit model. The data for the study was collected from tertiary level students of Kumasi Polytechnic library through the use of structured questionnaires.

The remaining part of the paper is organized as follows: Section 2 describes the concept of methods employed in the research. The empirical analysis, results and discussion are presented in Section 3. Section 4 provides the concluding remarks.

2. METHODOLOGY

The data used in the study is obtained from a self administered questionnaire administered by the researchers in the library hall of Kumasi Polytechnic.

Kumasi Polytechnic is located in the capital city of Ashanti Region of Ghana (Kumasi) and among the ten Polytechnics in Ghana. The Polytechnic was established in 1954, then known as Kumasi Technical Institute and

became a Polytechnic on 30th October, 1963. It was later upgraded to a tertiary institution following the enactment of the Polytechnic Law 1992, PNDC Law 321. Prior to the enactment of the Polytechnic Law 1992, the Polytechnic then run Technician and Diploma programmes with few professional courses. Currently, the Polytechnic has 17 departments under six faculties, two institutes and a school offering full-time and part-time programmes at tertiary and non-tertiary levels.

The survey was conducted in May of 2012 and collected data on variables related to the services provided at the Kumasi Polytechnic such as availability of current and relevant materials, reliable internet facility, enough comfortable seats and computers, good environmental and lighting system, lending policies. Some demographic characteristics of the respondents (students) were also collected.

A sample of 500 students who were using the library facilities at the time of the survey was randomly interviewed and the response rate for the administered questionnaires was 98%. The respondents were asked to rate their overall satisfaction with the library services on a four point scale with 1 being poor and 4 being excellent. To determine the possible factors influencing the overall satisfaction level of the respondents, an ordinal logistic regression model was specified. This type of model was chosen due to the ordinal and polytomous nature of the response variable.

2.1 Model Specification

The statistical model employed in this study is the Ordinal Logistic regression model. The ordinal logistic regression model is used to explain the relationship between an ordinal polytomous dependent variables and categorical and /or continuous independent variable. The model is similar to the multinomial logistic regression model but it takes into account the ordinal nature of the dependent variable. Suppose an ordinal categorical response Y with J categories and explanatory variable $x,$ the ordinal logistic regression model with logit function is defined as (Agresti, 2007):

$$\log\left[\frac{P(y \le j \mid x)}{1-P(y \le j \mid x)}\right] = \alpha_j + \sum_{i=1}^{k} \beta_i x_i, \qquad j = 1,\ldots,J-1 \tag{1}$$

where $P(Y \le j)$ describes the cumulative probability for category $j.$ The cumulative probability reflect the ordering, with $P(Y \le 1) \le P(Y \le 2) \le \ldots \le P(Y \le J) = 1.$ Each probability can be calculated as:

$$P(y \le j) = \frac{\exp\left(\alpha_j + \sum_{i=1}^{k} \beta_i x_i\right)}{1+\exp\left(\alpha_j + \sum_{i=1}^{k} \beta_i x_i\right)} \tag{2}$$

From equation (1) and under assumption of parallel lines, the relationship between all pairs of categories is the same, we obtain only one slope coefficient (beta) for the estimated model and different intercept for each category. The estimated value of the coefficient describes the relationship between: say the lowest category

(i.e. poor) versus all higher categories of the response variable and is the same as the coefficient describing relationship between the next lowest category and all higher categories (McCullagh, 1980).

The parameters in the model can be estimated using maximum likelihood estimation method. The ordinal logit model can be evaluated using the likelihood ratio test to test the significant difference between the unrestricted which contain covariates and the restricted model which contains only the intercept (Greene, 2003; Hilbe and Greene, 2008). The interpretation of the estimated coefficient is as follows: As x increases, for $\beta > 0$, the response on y is more likely to fall at the lower end of the ordinal scale and for $\beta < 0$, the response on y is more likely to fall at the higher end of the ordinal scale. This implies that when the proportional odds assumption hold, the partial effect of $\hat{\beta}$ of the covariates x is not dependent of the category (Lin, 1999).

3 EMPIRICAL RESULTS AND DISCUSSIONS

3.1 Sample Students Characteristics

Among the sampled students, majority (57.2%) of them think that the overall service quality of the library is good whiles 30.8% think it is moderate. About 6.7% and 4.3% think the overall service quality of the library is excellent and poor respectively.

Table 1 presents the sample characteristics of the students interviewed stratified by their rating for overall service quality of the library. Among the students who rated the overall service quality of the library, higher proportion of both males and females rated the overall service quality to be good. Within the three academic levels, second-year students' form the majority group in the sample. However, higher proportion of all the academic levels rated the overall service quality to be good. With respect to faculties, higher proportion (71.7%) of the students interviewed belong to school of Business and Management studies with the least (2.8) belonging to school of Applied Science. Also most of the students from all the faculties rated the overall service quality to be good except students from the Applied Science whom majority of whom rated the service quality to be moderate. Among the sampled students, almost two-third claims they (63.4%) have never received orientation on the library usage since admitted into the school. However, majority of the students rated the overall service quality to be good irrespective of whether they have received library orientation or not.

From the sample, it was found that, on the average all the students involved in the study have used the library facilities for more than twelve (12) times within the semester. This shows that the sampled students were not new to the library. Also most of these students normally visit the library to use some of the library collections such as text books and newspapers as well as read their own lecture notes, whiles only few students do visit the library to use their computers for word processing as well as internet surfing. This result is consistent with those obtained in a similar study by Okiy (2000) and Ugah (2007). The results in Table 1 generally show that most of the students are satisfied with the overall service quality of the polytechnic library.

Table 2 shows the satisfaction level of students with respect to the individual service component related to the library. From Table 2, it can be seen that majority of the students expressed high satisfaction level with all the individual service component except service component such as current and relevant materials; the number of computers available at the library as well as the reliability of the internet. Thus, students are moderately satisfied with current and relevant materials such as course books. Also they were dissatisfied with the number of computers available at the library as well as the reliability of the internet.

In general, the results from the Table 2 also confirm that students are satisfied with service quality of the school library. Also, course materials, computers as well as internet facilities were the three main library service segments that students requested for necessary improvement. Introduction of photocopying services was also recommended by most students.

3.2 Ordinal Logistic Regression Model Specification

In this study, the ordinal logistic regression model is specified to explain the effect of student satisfaction for various library service component on their rating for overall service quality.

The parameter estimates obtained for the model using maximum likelihood approach are presented in Table 3. For each of the covariate, the parameters for various categories are estimated relative to the selected reference level. Thus, for $J+1$ covariates, J parameters are estimated. From the estimated ordinal logit model, it was found that students' rating for overall library service quality was significantly influenced by six explanatory variables: current and relevant materials; user instructions; internet facilities; friendly and helpful staff; and number of times the student has used the library facility. However, two additional explanatory variables (i.e. computers with internet access; and library security) which were found not to be significant were included in the model to support the fulfillment of model assumptions. The selection of the independent variables to be included in the final model was based on the significant contribution of that particular variable and the validity of the final model relative to the model assumptions. All the significant parameters of the fitted model have negative signs. This indicates that the marginal rating for overall service quality decreases when students are less satisfied with the individual service component.

To evaluate the goodness-of-fit of the fitted model, the Likelihood Ratio Test was performed. Under the null hypothesis, the test assumes that the fitted model is not significantly different from a model without any covariate (null model). Based on the test results as presented in Table 3, we conclude at 5% significant level that the fitted model is different from the null model. Similarly, the proportional odds assumption of parallel lines (i.e. same slope coefficient across response categories) was also verified using likelihood Chi-square test. The result of the test under the null hypothesis of same slope coefficient across response categories is also justified at 5% significant level. Hence, the fitted model can be considered satisfactory.

The fitted ordinal logit model indicates that students who are dissatisfied and moderately satisfied with the availability of current and relevant materials at the library are 83% and 59% less likely to rate the overall service quality in the higher category (i.e. excellent instead of good or moderate or poor) than students who are satisfied with the availability of current and relevant materials respectively. Similarly students who are dissatisfied and moderately satisfied with adequate user instructions at the library are 74% and 54% less likely to rate the overall service quality in the higher category than students who are satisfied with adequate user instructions respectively. With respect to reliability of internet facility, students who are dissatisfied and moderately satisfied with the reliability of internet facility are 74% and 59% less likely to rate the overall service quality as excellent instead of good or moderate or poor than students who are satisfied with the reliability of internet facility respectively. Whereas students who are dissatisfied with library staff friendliness and helpfulness are about 73% less likely to rate the overall service quality in the higher category, students who are moderately satisfied with the staff friendliness and helpfulness are about 63% less likely to rate the overall service quality as excellent instead of good or moderate or poor than students who are satisfied. Also, students who are moderately satisfied with the service queue at the library are 46% less likely to rate the overall service quality in the higher category than students who are satisfied with library service queue. When the effect of the number of times a student has used the library facility on overall service quality rating was examined, it was found that students who have used the library for about 9 to 12 times within the semester are about 66% less likely to rate the overall service quality

in the higher category (i.e. excellent instead of good or moderate or poor) than students who have used the library facility for more than 12 times with the semester.

In general, the estimated model suggest that among all the variables, availability of current and relevant materials; adequate user instructions; reliable internet facilities as well as friendly and helpful library staff are the first four (4) library service segment that highly influenced the students ratings for overall service quality.

4. CONCLUSION

The paper has investigated on students satisfaction level with individual service component of Kumasi Polytechnic library and its effect on their rating for overall service quality. To explain the motive behind students ratings for overall service quality, an ordinal logistic regression model which consist of individual service component of the library was specified. The results in general suggest that more than 60% of the sampled students rated the overall service quality of the polytechnic library to be at 75th percentile and above (i.e. good to excellent). Only 4.3% of them rated the overall service quality to be at the 25th percentile (i.e. poor). This shows that most of the students are satisfied with the services provided by the library unit. Among other services, most of the students do visit the library to read some of the collections such as books and newspapers as well as their own lecture notes. The fitted ordinal logit model suggests that student rating for overall service quality of library decreases when they are less satisfied with the individual service components such as relevant materials at the library, reliability of the internet facilities, service queue, user instructions and the attitude of the supporting staffs. Among these service components, current and relevant materials was found to be most significant library service component that influence students ratings for overall service quality. Also, course materials, computers as well as internet facilities were the three main library service segments that students requested for necessary improvement. Introduction of photocopying services was also recommended by most students.

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Table 1: Sample Characteristics by Overall Service Quality Ratings

Variable	Overall Service Quality Rating (Frequency)				
	Poor	*Moderate*	*Good*	*Excellent*	*Total*
Gender					
Female	10	48	78	15	151
Male	10	95	188	16	309
Academic level					
First year	3	46	87	8	144
Second year	8	45	108	16	177
Third year	9	52	70	7	138
Faculty					
Applied Science	2	7	4	0	13
Buss. and Mgt. Studies	14	95	193	28	330
Engineering	3	14	20	2	39
Built and Nat. Environ.	1	11	22	1	35
Medicine and Health Sc.	0	10	16	0	26
Inst. of Entrepreneurship	0	6	11	0	17
Orientation					
Yes	5	45	100	15	165
No	15	98	166	16	295
Number of Visit					
1 – 4	4	19	37	2	62
5 – 8	2	29	50	8	89
9 – 12	4	27	29	2	62
More than 12	10	68	150	19	247
Reason for Visit					
My own notes	17	123	245	30	415
Library collection	8	75	149	11	243
Borrow book	0	13	41	7	61
Use computer	1	12	24	5	42
Use internet	1	27	60	9	97

Note: Percentage for missing values are not shown in the table

Table 2: Student's Satisfaction Level with Individual Service Component

Service Component	Satisfaction Level (%)		
	Dissatisfied	*Moderate*	*Satisfied*
Current and relevant materials	24.9	42.4	29.5
Quiet environment	7.5	19.4	71.4
Well organized library materials	6.9	24.7	65.8
Adequate user instructions	13.3	34.4	48.8
Comfortable seats	9.2	23.4	65.8
Good lighting system	12.5	18.1	67.5
Reliable internet facilities	44.5	32.5	18.7
Enough computers with internet access	62.8	23.9	9.0
Enough seat and tables	22.6	27.5	47.7
Friendly and helpful staff	25.4	37.4	34.8
Adequate staff	11.6	35.9	48.8
Good lending policy	15.3	38.5	40.2
Service queue	12.0	37.2	43.9
Adequate security	22.6	29.0	44.3
Opening and closing hours	26.5	17.4	54.0

Note: Percentage for missing values are not shown in the table

Table 3: Parameter Estimates for Student's Rating Model

Variable	Coefficient	Standard error	P-value	Odds Ratio
Poor	-7.611	0.625	0.000	---
Moderate	-4.268	0.519	0.000	---
Good	0.358	0.427	0.402	---
Excellent	Referenced	---	---	---
Current and relevant materials				
Dissatisfied	-1.782	0.354	0.000	0.168
Moderately Satisfied	-0.893	0.305	0.003	0.409
Satisfied	Referenced	---	---	---
User instructions				
Dissatisfied	-1.332	0.368	0.000	0.264
Moderately Satisfied	-0.784	0.255	0.002	0.457
Satisfied	Referenced	---	---	---
Internet facilities				
Dissatisfied	-1.333	0.376	0.000	0.264
Moderately Satisfied	-0.885	0.358	0.013	0.413
Satisfied	Referenced	---	---	---
Computers with internet Access				
Dissatisfied	0.121	0.467	0.796	1.129
Moderately Satisfied	0.602	0.477	0.207	1.826
Satisfied	Referenced	---	---	---
Friendly and helpful staff				
Dissatisfied	-1.321	0.330	0.000	0.267
Moderately Satisfied	-0.996	0.285	0.000	0.369
Satisfied	Referenced	---	---	---
Service queue				
Dissatisfied	-0.681	0.369	0.065	0.506
Moderately Satisfied	-0.612	0.267	0.022	0.542
Satisfied	Referenced	---	---	---
Library security				
Dissatisfied	-0.174	0.304	0.567	0.840
Moderately Satisfied	-0.142	0.273	0.602	0.868
Satisfied	Referenced	---	---	---
Number of Time used (as Referenced level)				
1 – 4	-0.559	0.336	0.096	0.572
5 – 8	0.119	0.293	0.686	1.126
9 – 12	-1.075	0.343	0.002	0.341
More than 12	Referenced	---	---	---
Overall Goodness of fit test (Likelihood Ratio Chi-square test)			0.000	
Test of Parallel Lines (Likelihood Ratio Chi-square test)			0.131	