

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

August 2020

Evaluating Medical Students' Satisfaction towards Library Resources and Services offered at Saudi Universities using Six Sigma approach

Ahmed Al Kuwaiti PhD

Associate Professor & General Supervisor, Department of Dental Education, College of Dentistry & Deanship of Quality and Academic Accreditation, Imam Abdulrahman Bin Faisal University (IAU), P.O. box 40065, Al-Khobar 31952, Saudi Arabia. Email: akuwaiti@iau.edu.sa, qaa@iau.edu.sa

Follow this and additional works at: <https://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#), and the [Medical Education Commons](#)

Al Kuwaiti, Ahmed PhD, "Evaluating Medical Students' Satisfaction towards Library Resources and Services offered at Saudi Universities using Six Sigma approach" (2020). *Library Philosophy and Practice (e-journal)*. 4146.

<https://digitalcommons.unl.edu/libphilprac/4146>

Evaluating Medical Students' Satisfaction towards Library Resources and Services offered at Saudi Universities using Six Sigma approach

Ahmed Al Kuwaiti

*Associate Professor & General Supervisor, Department of Dental Education,
College of Dentistry & Deanship of Quality and Academic Accreditation,
Imam Abdulrahman Bin Faisal University (IAU), P.O. box 40065, Al-Khobar 31952,
Saudi Arabia. Email: akuwaiti@iau.edu.sa*

Abstract

Higher education institutions (HEIs) are utilizing a user satisfaction survey to assess user satisfaction and reveal the strengths and weaknesses of their libraries. This feedback aids their policymakers to improve the quality of library resources and services offered. However, no studies have been conducted using a Six Sigma approach to assess the medical students' satisfaction towards the library resources and services offered in the Saudi Arabian context. As an attempt, this study evaluated the medical students' satisfaction towards the library resources and services offered at the selected Saudi universities using a Six Sigma approach. A total of 1000 medical students were randomly selected from four Saudi universities (i.e., 250 students of each). Those medical students were administered with a Library user satisfaction survey (LUSS), and 799 completed surveys were received. The survey consisted of 21 items, and the response for each item was rated using a 5-point Likert scale. Further, the sigma rating was calculated based on the non-conformance level using the Six Sigma analytical tool, namely the "Poisson distribution model". The results showed that the sigma rating for the medical students' satisfaction towards the library resources and services was observed between 2σ to 3σ . Based on the modified Six sigma performance scale, the library resources and services provided to those medical students are "adaptable" and are just sufficient to accomplish the learning resources requirements without hindering performance. This study recommended appropriate strategies to improve the medical students' satisfaction towards the library resources and services offered at Saudi universities.

Keywords: Library, Medical students, Satisfaction, Saudi universities, Six Sigma, Survey

Introduction

A library attached to higher education institutions (HEIs) plays a crucial role in delivering the information services and resources to support users in their education and research doings (Olukayode & Lekan, 2019). It is anticipated to obtain, reserve, and distribute information resources that would satisfy the needs of both current and future users (Oyesiku, Buraimo, & Olusanya, 2012). Library users embrace the students and the faculty of the HEIs (Nkamnebe, Udem, & Nkamnebe, 2014). Usually, the efficiency of a library is assessed by how active the library meets the users' needs in alignment with its' goals and objectives (Nwalo, 2003). The assessment of the library should be done in time to time by their users (Ababio et al., 2012). It is observed that user satisfaction characterizes the degree to which a library meets the needs and expectations of its' users (Cooper & Dempsey, 1998). Moreover, in academic libraries, user satisfaction is commonly assessed by a library user satisfaction survey (Hiller, 2001). It is considered as the primary tool used to assess the quality of library services from the point of view of user satisfaction (Majeed & Bavakutty, 2006). It assists in evaluating the strengths and weaknesses of libraries and offering a chance to the administrators to improve user satisfaction (Mairaj & Naseer, 2013). Various researchers have utilized surveys to assess the user satisfaction towards library resources and services offered in the higher education (HE) environment (Adam, 2017; Adeniran, 2011; Chandrasekar & Murugathas, 2012; Gunasekera, 2010; Idiegbeyan & Esse, 2013).

As the Library user satisfaction survey is widely used in the HE environment, HEIs in Saudi Arabia are also utilizing this survey to assess user satisfaction towards the library resources and services offered. This survey also supports them in meeting the requirements of national accreditation. In the Saudi Arabian context, various studies have been conducted concerning library services (Alasem, 2013; Aliaghbry & Sheikhidrismohamed, 2015; Hassanain & Mudhei, 2006; Hussain & Abalkhail, 2013; Rafiq Chaudry, 1994). Interestingly,

previous studies have successfully applied quality improvement methods such as Six Sigma methodology in higher education, explicitly providing the sigma rating for the services offered (Al Kuwaiti & Subbarayalu, 2015; Subbarayalu & Al Kuwaiti, 2017; Vijay, 2013). Nevertheless, no studies have been utilized Six Sigma methodology for assessing the medical students' satisfaction towards the library resources and services offered in Saudi universities. As an attempt, this study intended to evaluate the medical students' satisfaction towards the quality of the library resources and services offered at Saudi universities using the Six Sigma approach. This study focused on the students since they are the primary users of the university library. It would assist policymakers in revealing the medical students' hidden perceptions over the library resources and services offered at Saudi universities, and frame the appropriate strategies to improve the efficiency of the library services.

Methodology

In this study, an exploratory study design was adopted to evaluate the medical students' satisfaction towards library resources and services offered at Saudi universities using a Six Sigma approach. This study was conducted during the academic year of 2018/19. All undergraduate medical students of the selected Saudi universities (N=4) were considered as the population of this study. A total of 1000 medical students were randomly selected from those four Saudi universities (i.e., 250 students from each). To achieve the study objective, a self-structured questionnaire named "Library user satisfaction survey (LUSS)" was developed following a series of brainstorming sessions with the medical education experts in Saudi Arabia (see Appendix). This survey was administered using a paper-based method to the randomly selected medical students. Furthermore, all participants were invited to complete the survey within a stipulated time after filling the informed consent form. Out of 1000, 799 completed questionnaires were received, representing a 79.9% response rate.

Concerning LUSS, it consisted of 21 items capturing the level of medical students' satisfaction towards the library resources and services offered at Saudi universities. Also, it has two global items revealing the overall medical students' satisfaction towards the quality of library resources and services offered at Saudi universities. Each item has a Likert-type scale, and the response was rated using a 5-point ordinal scale, described as strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1).

Furthermore, the data of LUSS were analysed for the non-conformance level using the Six Sigma analytical tool, namely the "Poisson distribution model." This model was applied with the assumption that when several choices are given in the survey, the chance for a student to record dissatisfaction on every choice is minimum. The response options provided for each item in the survey ranged from 1 to 5, where the selection of options 1, 2, and 3 was considered as "non-conformance." Likewise, the choice of the options 4 and 5 by the students was considered as "conformance." Subsequently, the sigma rating was calculated based on the number of non-conformance reported by the medical students of the selected Saudi universities. Based on the sigma rating obtained, the performance of the library at the selected Saudi universities was graded using a modified Six Sigma performance rating scale. This scale was developed based on the scale utilized by Al Kuwaiti & Subbarayalu (2015), and the descriptions are modified to rate the quality of library resources & services offered at the selected Saudi universities. The description of the modified Six Sigma performance rating scale utilized in this study is described in Table 1. Higher the sigma value, the better is the quality of library resources and services offered at Saudi universities.

Table 1

Modified Six Sigma performance rating scale for grading the medical students' opinion about the quality of library resources and services offered at Saudi universities

Sigma value	Sigma rating range Descriptions	Description of the Sigma rating
6	Above 5 and up to 6	"Excellent World-class library resources and services" provided to the students in fulfilling the learning resources requirements
5	Above 4 and up to 5	"Benchmarked and competitive library resources and services" offered to the students in fulfilling the learning resources requirements
4	Above 3 and up to 4	Library resources and services provided to the students are "adequate" with medium necessary provisions needs to be carried out to accomplish the learning resources requirements in an efficient way
3	Above 2 and up to 3	Library resources and services provided to the students are "adaptable" and are just sufficient to accomplish the learning resources requirements without hindering performance
2	Above 1 and up to 2	"Highly Compromised Library resources and services" that have the possibility to negatively impact the learning resources requirements of the students in the short run
1	Less than or equal to 1	Library resources and services are "totally inadequate and poor" for the students to fulfill the learning resources requirements.

Results

The distribution of respondents belonging to the selected Saudi universities such as Imam Abdulrahman Bin Faisal University (IAU), King Saud University (KSU), King Abdulaziz University (KAU), and King Khalid University (KKU) were found as 214 (26.8%), 201 (25.2%), 196 (24.5%), and 188 (23.5%) respectively (Table 2).

Table 2*Number of medical students responded to LUSS*

Name of the university	No. of medical students responded n (%)
Imam Abdulrahman Bin Faisal University (IAU)	214 (26.8%)
King Saud University (KSU)	201 (25.2%)
King Abdulaziz University (KAU)	196 (24.5%)
King Khalid University (KKU)	188 (23.5%)
Total	799 (100%)

Sigma rating of medical students' satisfaction towards library resources and services offered at Saudi universities

While reviewing the results, sigma rating for the medical students' satisfaction towards library resources and services offered at IAU was observed between 2.2σ to 2.5σ . The highest sigma rating of 2.5σ was noted for the items "Electronic journals are sufficiently available and easy to access", "I am satisfied with workshops and lectures offered by library", and "I am satisfied with Library staff assistance". The lowest sigma rating of 2.2σ was found for the items "Project reports/theses are adequately available in our library", and "I am satisfied with the issue and return services" (Table 3).

Secondly, medical students' satisfaction towards library resources and services offered at KSU was rated between 2.2σ to 2.6σ . The items such as "Electronic journals are sufficiently available and easy to access", and "I am satisfied with workshops and lectures offered by library" were rated with the highest sigma rating of 2.6σ . Whereas, the items such as "I am satisfied with the issue and return services", and "Individual and Group study rooms are readily available" were observed with the lowest sigma rating of 2.2σ (Table 4).

Thirdly, medical students of KAU rated the library resources and services offered at their university with the range of 2.3σ to 2.7σ . Here, the students perceived “Electronic journals are sufficiently available and easy to access”, and “I am satisfied with workshops and lectures offered by library” with the highest sigma rating of 2.7σ . Only one item, " Individual and Group study rooms are readily available," was rated with the lowest sigma rating of 2.3σ (Table 5).

Lastly, sigma rating provided by medical students of KKU towards the library resources and services were observed between 2.1σ to 2.5σ . Among all items, “e-books are adequately available and accessible”, and “Electronic journals are sufficiently available and easy to access” had the sigma rating of 2.5σ as the highest. On the other hand, the items such as "I am satisfied with the issue and return services", and "Library provides its reference services in the promised time" were observed with the lowest sigma rating of 2.1σ (Table 6).

While reviewing the results, sigma rating for the medical students’ satisfaction of the selected Saudi universities towards all items of LUSS was observed within the category of 2 and 3 of the modified Six Sigma performance rating scale. This category indicates that library resources and services provided to the students are “adaptable” and are just sufficient to accomplish the learning resources requirements without hindering performance.

Overall, medical students rated the library resources available at the selected Saudi universities as 2.5 (IAU), 2.6 (KSU), 2.7 (KAU), and 2.4 (KKU), respectively (Table 7). Those medical students also rated the library services offered at the selected Saudi universities as 2.4 (IAU), 2.5 (KSU), 2.6 (KAU), and 2.5 (KKU), respectively (Table 8). Sigma rating for overall medical students’ satisfaction towards the library resources and services at the selected Saudi universities falls within the category of 2 and 3 of the modified Six Sigma performance rating scale. This category indicates that library resources and services provided to the students are

“adaptable” and are just sufficient to accomplish the learning resources requirements without hindering performance.

Table 3

Sigma rating for medical students' satisfaction towards library resources and services offered at IAU

Item no.	Opportunities	Defects	DPO	Chances for a student to be totally satisfied	Non-conformance per student	PPM	Sigma level
1	214	51	0.238318	0.787952	0.212048	212047.7	2.3
2	214	41	0.191589	0.825646	0.174354	174353.7	2.4
3	214	52	0.242991	0.784279	0.215721	215721.2	2.3
4	214	35	0.163551	0.849123	0.150877	150877.1	2.5
5	214	57	0.266355	0.766167	0.233833	233833	2.2
6	214	42	0.196262	0.821797	0.178203	178202.8	2.4
7	214	43	0.200935	0.817966	0.182034	182034.1	2.4
8	214	54	0.252336	0.776983	0.223017	223016.7	2.3
9	214	56	0.261682	0.769756	0.230244	230244.4	2.2
10	214	42	0.196262	0.821797	0.178203	178202.8	2.4
11	214	41	0.191589	0.825646	0.174354	174353.7	2.4
12	214	36	0.168224	0.845164	0.154836	154835.8	2.5

13	214	53	0.247664	0.780623	0.219377	219377.5	2.3
14	214	52	0.242991	0.784279	0.215721	215721.2	2.3
15	214	42	0.196262	0.821797	0.178203	178202.8	2.4
16	214	46	0.214953	0.806579	0.193421	193420.9	2.4
17	214	49	0.228972	0.795351	0.204649	204649.2	2.3
18	214	39	0.182243	0.833399	0.166601	166601.2	2.5
19	214	45	0.21028	0.810357	0.189643	189643	2.4
20	214	39	0.182243	0.833399	0.166601	166601.2	2.5
21	214	49	0.228972	0.795351	0.204649	204649.2	2.3

Table 4

Sigma rating for medical students' satisfaction towards library resources and services offered at KSU

Item no.	Opportunities	Defects	DPO	Chances for a student to be totally satisfied	Non-conformance per student	PPM	Sigma level
1	201	39	0.19403	0.823633	0.176367	176366.7	2.4
2	201	35	0.174129	0.840188	0.159812	159811.8	2.5
3	201	34	0.169154	0.844379	0.155621	155621.3	2.5
4	201	29	0.144279	0.865647	0.134353	134353.5	2.6
5	201	49	0.243781	0.783659	0.216341	216340.8	2.3
6	201	42	0.208955	0.811432	0.188568	188568.4	2.4
7	201	41	0.20398	0.815479	0.184521	184521.4	2.4
8	201	37	0.18408	0.83187	0.16813	168130.4	2.5
9	201	56	0.278607	0.756837	0.243163	243162.7	2.2
10	201	49	0.243781	0.783659	0.216341	216340.8	2.3
11	201	34	0.169154	0.844379	0.155621	155621.3	2.5
12	201	31	0.154229	0.857076	0.142924	142924.1	2.6

13	201	43	0.21393	0.807405	0.192595	192595.4	2.4
14	201	49	0.243781	0.783659	0.216341	216340.8	2.3
15	201	39	0.19403	0.823633	0.176367	176366.7	2.4
16	201	53	0.263682	0.768218	0.231782	231781.9	2.2
17	201	48	0.238806	0.787568	0.212432	212432.3	2.3
18	201	39	0.19403	0.823633	0.176367	176366.7	2.4
19	201	33	0.164179	0.84859	0.15141	151410	2.5
20	201	37	0.18408	0.83187	0.16813	168130.4	2.5
21	201	49	0.243781	0.783659	0.216341	216340.8	2.3

Table 5*Sigma rating for medical students' satisfaction towards library resources and services offered at KAU*

Item no.	Opportunities	Defects	DPO	Chances for a student to be totally satisfied	Non-conformance per student	PPM	Sigma level
1	196	38	0.193878	0.823759	0.176241	176241.2	2.4
2	196	30	0.153061	0.858077	0.141923	141922.8	2.6
3	196	28	0.142857	0.866878	0.133122	133122.1	2.6
4	196	25	0.127551	0.880249	0.119751	119751.5	2.7
5	196	35	0.178571	0.836464	0.163536	163535.7	2.5
6	196	36	0.183673	0.832208	0.167792	167792.5	2.5
7	196	39	0.19898	0.819567	0.180433	180433.4	2.4
8	196	37	0.188776	0.827972	0.172028	172027.6	2.5
9	196	42	0.214286	0.807118	0.192882	192882.3	2.4
10	196	33	0.168367	0.845043	0.154957	154956.6	2.5
11	196	32	0.163265	0.849366	0.150634	150634.2	2.5
12	196	25	0.127551	0.880249	0.119751	119751.5	2.7

13	196	41	0.209184	0.811246	0.188754	188753.8	2.4
14	196	37	0.188776	0.827972	0.172028	172027.6	2.4
15	196	36	0.183673	0.832208	0.167792	167792.5	2.5
16	196	48	0.244898	0.782784	0.217216	217215.6	2.3
17	196	41	0.209184	0.811246	0.188754	188753.8	2.4
18	196	29	0.147959	0.862466	0.137534	137533.7	2.6
19	196	34	0.173469	0.840743	0.159257	159257.1	2.5
20	196	32	0.163265	0.849366	0.150634	150634.2	2.5
21	196	39	0.19898	0.819567	0.180433	180433.4	2.4

Table 6

Sigma rating for medical students' satisfaction towards library resources and services offered at KKU

Item no.	Opportunities	Defects	DPO	Chances for a student to be totally satisfied	Non-conformance per student	PPM	Sigma level
1	188	49	0.260638	0.77056	0.22944	229440.4	2.2
2	188	34	0.180851	0.83456	0.16544	165440.4	2.5
3	188	44	0.234043	0.791328	0.208672	208671.9	2.3
4	188	31	0.164894	0.847984	0.152016	152016.1	2.5
5	188	54	0.287234	0.750336	0.249664	249663.9	2.2
6	188	42	0.223404	0.799791	0.200209	200208.5	2.3
7	188	49	0.260638	0.77056	0.22944	229440.4	2.2
8	188	46	0.244681	0.782954	0.217046	217045.6	2.3
9	188	61	0.324468	0.722912	0.277088	277088.2	2.1
10	188	59	0.31383	0.730643	0.269357	269356.6	2.1
11	188	39	0.207447	0.812656	0.187344	187343.5	2.4
12	188	44	0.234043	0.791328	0.208672	208671.9	2.3

13	188	53	0.281915	0.754338	0.245662	245662.1	2.2
14	188	57	0.303191	0.738458	0.261542	261542.3	2.3
15	188	45	0.239362	0.78713	0.21287	212869.9	2.3
16	188	55	0.292553	0.746356	0.253644	253644.5	2.2
17	188	51	0.271277	0.762406	0.237594	237594.4	2.2
18	188	43	0.228723	0.795549	0.204451	204451.5	2.3
19	188	38	0.202128	0.816991	0.183009	183009.4	2.4
20	188	32	0.170213	0.843485	0.156515	156514.7	2.5
21	188	42	0.223404	0.799791	0.200209	200208.5	2.3

Table 7

Sigma rating for medical students' overall satisfaction towards library resources offered at selected Saudi universities

Name of the University	Opportunities	Defects	DPO	Chances for a student to be totally satisfied	Non-conformance per student	PPM	Sigma level
Imam Abdulrahman Bin Faisal University (IAU)	214	36	0.168224	0.845164	0.154836	154835.8	2.5
King Saud University (KSU)	201	29	0.144279	0.865647	0.134353	134353.5	2.6
King Abdulaziz University (KAU)	196	24	0.122449	0.884751	0.115249	115249	2.7
King Khalid University (KKU)	188	41	0.218085	0.804057	0.195943	195943	2.4

Table 8

Sigma rating for medical students' overall satisfaction towards library services offered at selected Saudi universities

Name of the University	Opportunities	Defects	DPO	Chances for a student to be totally satisfied	Non-conformance per student	PPM	Sigma level
Imam Abdulrahman Bin Faisal University (IAU)	214	42	0.196262	0.821797	0.178203	178202.8	2.4
King Saud University (KSU)	201	34	0.169154	0.844379	0.155621	155621.3	2.5
King Abdulaziz University (KAU)	196	29	0.147959	0.862466	0.137534	137533.7	2.6
King Khalid University (KKU)	188	34	0.180851	0.83456	0.16544	165440.4	2.5

Discussion

This study evaluated the medical students' satisfaction with the library resources and services offered at selected Saudi universities using the Six Sigma approach. The data were collected from the medical students using LUSS and analyzed through the Poisson distribution model.

In this study, the analysis of medical students' feedback using the Poisson distribution model yielded a high sigma rating for the availability and accessibility of electronic journals as well as e-books, workshops, and lectures offered by their library, and assistance from their library staff. On the other hand, a low sigma rating was observed concerning the availability of the project reports/theses, individual and group study rooms in their library, issue and return services, and reference services. Besides, all items of LUSS were rated by the medical students with the sigma rating that falls in the category of 2 and 3 in the modified Six Sigma performance rating scale. Hence, library resources and services provided to the medical students of those Saudi universities are “adaptable” and are just sufficient to accomplish the learning resources requirements without hindering performance.

Concerning the overall satisfaction towards the library resources and services, medical students' perception yields a sigma rating that falls between the category of 2 and 3 in the modified Six Sigma performance rating scale. Hence, library resources and services provided to the medical students of those Saudi universities are “adaptable” and are just sufficient to accomplish the learning resources requirements without hindering performance. In line with these findings, Al Kuwaiti & Subbarayalu (2015) stated that Saudi students rated the elements such as sufficiency of library facilities available in their college, help, and service provided by the library staff, and library service timings as adaptable and sufficient to accomplish the objectives of their programs. In contrast, Vijay (2013) stated that the quality and quantity of

books in the library was rated by the students in an Indian higher education institution as inadequate and just sufficient to improve their learning without hindering the academic performance. It is advised that immediate attention is required to overcome such an issue related to the learning resources. Moreover, Larson & Owusu-Acheaw (2012) found that university students were satisfied with the existing resources and services of the library in Ghana. However, there is still room for improvement in the library resources and services delivered.

In conclusion, this study observed the medical students' satisfaction towards library resources and services offered at the selected Saudi universities with the sigma rating between 2σ to 3σ . However, to reach a six-sigma level of quality, the medical students' satisfaction with the library resources, and services has to be improved and sustained in the long run. After taking into consideration the existing practices in Saudi university libraries and the voice of students, this study recommended the policy planners of HEIs to adopt the following strategies to further improve the quality of library resources and services offered at Saudi universities.

Strategies to improve the quality of library resources and services at Saudi universities

- Universities should encourage efficient management of the library and learning resources by appointing an adequate and appropriate number of qualified staff.
- Provide the appropriate support and training to enable medical students to use the learning resources, library, and all its services effectively.
- Encourage library visits among the medical students by giving planned library hours so that they can utilize it for their studies.
- Establish a formal reference desk in the library wherein both virtual and face to face reference services have to be offered to the users. Necessary assistance should be given

to support medical students in conducting searches and locating the required information.

- Install necessary provisions in the medical libraries to encourage both individual and small group study and research as required for the medical education program.
- Develop an acquisition policy to get balanced procurement of resources across all medical disciplines. Mainly, acquire textbooks in electronic formats for ease of access and use by the medical students. Library Administration should ensure that medical students are well informed of library developments such as the acquisition of new materials, training programs, or changes in services or opening hours.
- Universities can sign an agreement with other local & international universities to facilitate the exchange of learning resources to meet the needs of the medical students. Inter-library loan facilities have to be encouraged among Saudi universities as it is not in practice now.
- Periodically update the E-resources gateway based on the feedback from the academic programs' needs to ensure that all textbooks are available online if deemed possible.
- Encourage more faculty & teaching staff as well as medical students' participation in the collection development process.
- Necessary modification has to be made in the curriculum to promote library usage and integrate learning resources during curriculum writing.

Conclusion

This study utilized a Six Sigma analytical tool termed the Poisson distribution model to evaluate the medical students' satisfaction towards the library resources and services offered at the selected Saudi universities. Based on the modified Six Sigma performance scale, the library resources and services provided to the medical students of those Saudi universities are observed to be “adaptable” and are just sufficient to accomplish the learning resources

requirements without hindering performance. Based on the findings, this study provided appropriate strategies to improve the quality of library resources and services offered at Saudi universities, which in turn would lead to increased satisfaction among the medical students.

Limitations and Recommendations

As this study is limited to the medical students of the selected Saudi universities, further research can be extended with the inclusion of all Saudi universities. In future studies, other disciplines such as engineering, science, management, arts, and education can be included. Faculty's satisfaction towards the library resources and services offered at Saudi universities are uncovered, and further studies can focus on exploring this issue. Besides, user satisfaction towards the university library can be analyzed using other Six Sigma methods in the future.

References

- Ababio, K. A., Aidoo, E. N., Korankye, T., Saeed, B. I. I., Louis, M., & Nsowah-Nuamah, N. N. N. (2012). Modelling student's satisfaction with library services in a tertiary institution: Evidence from Kumasi Polytechnic. *Information and Knowledge Management*, 2(6), 85-94.
- Adam, R. (2017). Assessment of library service quality and user satisfaction among undergraduate students of Yusuf Maitama Sule University (YMSU) library. *Library Philosophy and Practice (e-journal)*, 1675. Retrieved from <https://digitalcommons.unl.edu/libphilprac/1675>
- Adeniran, P. (2011). User satisfaction with academic libraries services: Academic staff and students perspectives. *International Journal of Library and Information Science*, 3(10), 209-216.

- Al Kuwaiti, A., & Subbarayalu, A. V. (2015). Appraisal of students experience survey (SES) as a measure to manage the quality of higher education in the Kingdom of Saudi Arabia: An institutional study using Six Sigma model. *Educational Studies*, 41(4), 430-443.
- Alasem, A. N. (2013). Evaluating the usability of Saudi digital library's interface (SDL). In S. I. Ao, C. Douglas, W. S. Grundfest, & J. Burgstone (Eds.), *Proceedings of the World Congress on Engineering and Computer Science (WCECS): Vol. I. International Association of Engineers* (pp. 178-181). Hong Kong: Newswood Limited.
- Aliaghbry, B., & Sheikhidrismohamed, B. (2015). Assessment of information services provided by Najran University central library-from the perspective of faculties and students. *International Journal of Librarianship and Administration*, 6(2), 117-141.
- Chandrasekar, K., & Murugathas, K. (2012). An assessment of user satisfaction on library services: A case study of undergraduate biology students at the University of Jaffna. *Journal of the University Librarians Association of Sri Lanka*, 16(1), 34-45.
- Cooper, R., & Dempsey, P. R. (1998). Remote library users—Needs and expectations. *Library Trends*, 47(1), 42–65.
- Gunasekera, C. (2010). Students usage of an academic library: A user survey conducted at the main library University of Peradeniya. *Journal of the University Librarians Association of Sri Lanka*, 14(1), 43-60.
- Hassanain, M., & Mudhei, A. (2006). Post-occupancy evaluation of academic and research library facilities. *Structural Survey*, 24(3), 230-239.
- Hiller, S. (2001). Assessing user needs, satisfaction and library performance at the University of Washington library. *Library Trends*, 49(4), 605-625.
- Hussain, A., & Abalkhail, A. (2013). Determinants of library use, collections and services among the students of engineering: A case study of King Saud University. *Collection Building*, 32(3), 100-110.

- Idiegbeyan-Ose, J., & Esse, U. C. (2013). Students satisfaction with academic library resources and services: The Covenant University library experience. *Journal of Information and Knowledge Management*, 4(1), 64-75.
- Larson, G. A., & Owusu-Acheaw, M. (2012). Undergraduate students' satisfaction with library services in a faculty library in University of Education, Winneba. Ghana. *Library Philosophy and Practice (e-journal)*, 1027. Retrieved from <http://digitalcommons.unl.edu/libphilprac/1027>
- Mairaj, M. I., & Naseer, M. M. (2013). Library services and user satisfaction in developing countries: A case study. *Health Information & Libraries Journal*, 30(4), 318-326.
- Majeed, A., & Bavakutty, M. (2006). Measuring the quality of college and university library services. *Journal of Library and Information Science*, 31(2), 127-132.
- Nkamnebe, E. C., Udem, O. K., & Nkamnebe, C. B. (2014). Evaluation of the use of university library resources and services by the students of Paul University, Awka, Anambra State, Nigeria. *Library Philosophy and Practice (e-journal)*, 1147. Retrieved from <http://digitalcommons.unl.edu/libphilprac/1147>
- Nwalo, K. I. N. (2003). *Fundamentals of library practice: A manual on library routines*. Ibadan: Stirling Horden Publishers.
- Olukayode, A. S., & Lekan, I. O. (2019). Perspectives of users' satisfaction on library resources and services in Oyo State College of Health Science and Technology Ibadan" (2019). *Library Philosophy and Practice (ejournal)*. 2330. Retrieved from <https://digitalcommons.unl.edu/libphilprac/2330>
- Oyesiku, F. A., Buraimo, O., & Olusanya, O. F. (2012). Disruptive readers in academic libraries: A study of Olabisi Onabanjo University library. *Library Philosophy and Practice (e-journal)*, 766, Retrieved from <http://unllib.unl.edu/LPP/>

- Rafiq Chaudhry, M. (1994). User services at the KFUPM library, Dhahran, Saudi Arabia. *Library Review*, 43(2), 7-23.
- Subbarayalu, A. V., & Al Kuwaiti, A. (2017). Development of a Six Sigma rating scale for measuring the quality of work life of teaching staff. *International Journal for Quality Research*, 11(2), 397-418.
- Vijay, A. (2013). Appraisal of student rating as a measure to manage the quality of higher education in India: An institutional study using Six Sigma model approach. *International Journal for Quality Research*, 7(3), 3-14.

Appendix

Library User Satisfaction Survey (LUSS)

Library Resources and Services

Questions		Responses 5 4 3 2 1
Based on your experience as a medical student, select your level of agreement about following statements with five response options. Tick Any One of the response options described as follows: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), Strongly disagree (1)		
1	Text books are sufficiently available and easy to locate	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2	E-books are adequately available and accessible	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3	Print journals are readily available and adequate	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4	Electronic journals are sufficiently available and easy to access	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5	Project reports/theses are adequately available in our library	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6	Library Catalog (OPAC) available in our library is satisfactory	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
7	Our Library website is informative and easy to navigate	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
8	I am satisfied with Institutional Repository existing in our library	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
9	I am satisfied with the issue and return services	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
10	Reference services offered by our library is satisfactory	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
11	I am able to access the internet whenever I needed	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
12	I am satisfied with workshops and lectures offered by our library	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
13	Library guide/tutorials are useful	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
14	Photocopying, printing and scanning services are readily available	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
15	Library has enough computers to access	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
16	Individual and Group study rooms are readily available.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
17	I am satisfied with our library opening hours	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
18	I am satisfied with Library staff assistance	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
19	Cleanliness of Library environment is appreciable	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
20	Air-conditioning and lighting are adequate	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
21	Seating arrangement is adequate	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Overall

22	Overall, I am satisfied with the quality of library resources available in our library	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
23	Overall, I am satisfied with the quality of library services offered in our library	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>