Evidence Based Library and Information Practice

An Assessment of Information Control: Understanding Library Service Quality from Users' Perspectives

Retno Sayekti, Muhammad Aditya, Nurhayani, Tessa Simahate, Yusniah and Rina Devianty

Explore this journal

Article abstract

Objective – This study aims to measure library users' perceptions of the quality of information control using LibQual, a survey instrument that measures library users' minimum perceived and desired levels of service quality across three dimensions: Effect of Service, Library as Place, and Information Control. Numerous studies using LibQual have emphasized the service aspect, while quality of information control has received less attention. Previous studies have reported low quality of information control in academic libraries.

Methods – A descriptive survey was conducted at the library of the Universitas Islam Negeri Sumatera Utara (UINSU), Medan, Indonesia, where active members of the library total 49,892. Using proportional random sampling, 100 completed surveys were obtained from a total population of 49,892.

Results – This study shows that the quality of information control in the library of UINSU Medan does not meet minimum user expectations. Nevertheless, ease of navigation of information was perceived as acceptable. The study also reveals that the library has promoted information services through exhibition activities, user education activities, and social media.

Conclusion – The findings suggest the need for libraries to improve the quality of information services, including content of information, access protocols, search time, ease of navigation, interface, and access from outside the campus. Further, libraries need to conduct continuous service quality evaluation on a regular basis (using tools such as LibQual) to understand the needs of users in terms of information control better. The results from the present study provide strong evidence to support a recommendation that, in general, universities should provide required resources and funding for libraries to improve information services to ensure that the libraries meet quality standards.

Evidence Based Library and Information Practice

Research Article

An Assessment of Information Control: Understanding Library Service Quality from Users' Perspectives

Retno Sayekti
Senior Lecturer at the Department of Library and Information Sciences
Universitas Islam Negeri Sumatera Utara
Medan, Indonesia
Email: retnosayekti69@uinsu.ac.id

Muhammad Aditya
Librarian
Universitas Islam Negeri Sumatera Utara
Medan, Indonesia
Email: muhammad.aditya@uinsu.ac.id

Nurhayani
Lecturer at the Department of Islamic Guidance and Counselling
Universitas Islam Negeri Sumatera Utara
Medan, Indonesia
Email: nurhayani@uinsu.ac.id

Tessa Simahate
Chief Librarian
Universitas Negeri Medan
Medan, Indonesia
Email: echa@unimed.ac.id

Yusniah
Lecturer at the Department of Library and Information Sciences
Universitas Islam Negeri Sumatera Utara
Medan, Indonesia
Email: yusniah93@uinsu.ac.id

Rina Devianty
Lecturer at the Department of Indonesian Language
Universitas Islam Negeri Sumatera Utara
Medan, Indonesia
Email: rinadevianty@uinsu.ac.id

Abstract

Objective – This study aims to measure library users' perceptions of the quality of information control using LibQual, a survey instrument that measures library users' minimum perceived and desired levels of service quality across three dimensions: Effect of Service, Library as Place, and Information Control. Numerous studies using LibQual have emphasized the service aspect, while quality of information control has received less attention. Previous studies have reported low quality of information control in academic libraries.

Methods – A descriptive survey was conducted at the library of the Universitas Islam Negeri Sumatera Utara (UINSU), Medan, Indonesia, where active members of the library total 49,892. Using proportional random sampling, 100 completed surveys were obtained from a total population of 49,892.

Results – This study shows that the quality of information control in the library of UINSU Medan does not meet minimum user expectations. Nevertheless, ease of navigation of information was perceived as acceptable. The study also reveals that the library has promoted information services through exhibition activities, user education activities, and social media.

Conclusion – The findings suggest the need for libraries to improve the quality of information services, including content of information, access protocols, search time, ease of navigation, interface, and access from outside the campus. Further, libraries need to conduct continuous service quality evaluation on a regular basis (using tools such as LibQual) to understand the needs of users in terms of information control better. The results from the present study provide strong evidence to support a recommendation that, in general, universities should provide required resources and funding for libraries to improve information services to ensure that the libraries meet quality standards.

Introduction

This research was conducted at the State Islamic University of Sumatera Utara Medan (later called UINSU), Indonesia. The university has a total of 49,892 students consisting of undergraduate and graduate levels spreading to several faculties such as Islamic Education, Social Sciences, Communication and Islamic Preaching, Islamic Jurisprudence and Law, Islamic Economics and Business, Science and

Technology, Public Health, and Islamic Thoughts. Student enrolment in the university automatically enables them to become members of the library. However, all enrolled students do not, in fact, become users of the library. From our preliminary observation, we learned that students' attendance at the library is very low. Student attendance statistics drawn from the library system show that the average student physically visits the library once per year. Meanwhile, the average number of daily access to the library is about 250 students. This number is not comparable with the current number of library members.

In terms of its collection, the library has 114,345 volumes of books and subscribes to electronic journal databases. Nevertheless, the use of these databases is still limited. Despite students' lack of knowledge in using them, we observed that librarians do not provide consistent instruction or tutoring on the use of digital library services. Training on the use of the databases for the users was only conducted when the library first subscribed to those databases. Therefore, it is not uncommon to encounter students who cannot open OPAC or access the journal databases. There are no library guide or protocols provided for users to access electronic resources. Students are left confused not knowing how to operate the computer to access the journal databases. Meanwhile, access to electronic resources is only made possible by visiting the library and is impossible from outside the campus.

This study presents a rigorous method of analyzing students' perceptions of information access provided by the UINSU library. With this work, we intend to assess the perception of students regarding information service quality provided by the UINSU library. The study is based on the assumption that the alignment of students' perceptions, may, in our views, enhance the quality of information services.

This study aims to measure the quality of academic library service based on the Information Control dimension from the perspectives of the users' perceptions. The hypothesis is that there is a difference between the users' perceptions and minimum expectations, as well as between the users' ideal expectations and perceptions of the information control dimension.

Literature Review

The quality of higher education's library services in the digital era is dependent on the librarian (Nur & Seran, 2019). Today's young internet users form the majority of future library users, thus libraries are expected to become agents of information dissemination and exchange, and to provide users assistance with accessing, converting, analyzing, and evaluating information effectively and efficiently. Gardner and Eng (2005) claim that quality of service is dependent on whether the library can serve as a source of information for the younger generation.

Patil and Sawant (2017) hold that library services are said to be of quality only in cases where user expectations are satisfied. Khadka and Maharjan (2017) define customer satisfaction as an overall evaluation based on total service, over time. However, Huang et al. (2017) emphasize that the user focuses more on the concrete knowledge desired from the library, while librarians are more focused on how users learn to discover things with a variety of resources and technical assistance, and whether they become independent in fulfilling their information retrieval abilities.

Plum (1994) has long understood the need for academic libraries to integrate technological advances into direct social relations with visitors. Library services demand responsiveness and speedy information delivery balanced with self-reliance i.e., enabling user independence in exploring and utilizing library information resources. LibQual is able to measure the quality of library services because self-reliance and responsiveness are part of the indicators in the LibQual dimension (Association of Research Libraries,

n.d.). This instrument, however, has received criticism (Edgar, 2006; McCaffrey, 2019; Roszkowski et al., 2005) despite its wide usage as a measure of library user satisfaction and improving library service quality. McCaffrey (2019), for instance, argues that LibQual only measures one-sided concepts in the field of library operations. The instrument also emphasizes gradual user success and the importance of independence, but does not explicitly conceptualize the user's experience in library quality services or immediate need for information, education, persuasion, or professional assistance.

Service quality measurements aim to distinguish between the actions and the service of a library. Thus, the measurement of service quality is often in a user-based survey form. Conversely, outcome measurements help to plan and assess programs from a user perspective and are more specifically oriented towards certain programs. Often this is performed by interviewing users shortly after participating in a library program to ascertain whether the program objectives are being achieved, and the results can be very helpful for outreach programs. The outcome-based LibQual evaluates the professionalism of librarians (McCaffrey, 2019). Thus, LibQual also serves as a tool for confirming service excellence, thereby measuring service quality.

Some studies discovered low information control dimension in gap analysis and ease of access indicators (Islamy et al., 2016; Kayongo & Jones, 2008). Thus, there is a need to improve services related to easy access, especially in terms of the suitability of the information searching system in the library.

Information control is a dimension used for measuring service quality from a content perspective, for measuring access to information resources, and for measuring the scope of content offered by libraries, as well as convenience, navigation ease, timeliness, equipment availability, and user independence in resource use (Thompson et al., 2009). This includes the collection strength and availability, information coverage, speed and convenience in accessing information from within or outside the library, and the speed with which users are able to access information. The availability of equipment and independence are also part of this dimension. Furthermore, computer equipment availability, search access, and Wi-Fi hotspot facilities are important factors in encouraging the academic community to be independent in utilizing library services.

Access to Information Resources

The various forms and information content provided are part of the ease of access to information in libraries, while the use of electronic and online media such as VLE (Virtual Learning Environment), social media, and websites is part of measuring library information content and services, determining user perceptions and expectations (Atkinson, 2016).

Currently, there is no definition simple enough to explain the accessibility of information (Foley & Helfert, 2010), however, some experts define accessibility as "easy access to a large number of information resources within the system" or "data acquisition or achievement in information searching" (Blixrud, 2002, p. 158; Nwachukwu et al., 2014, p.1). A study by Mudarri and Abdo Al-Rabeei (2015) shows numerous models developed in measuring online access to information. These include the Access Control Matrix (Lampson, 1974), Mandatory Access Control (MAC) (Nunes Leal Franqueira, 2006), Discretionary Access Control (DAC) (Verification and test Methods for Access Control Policies / Models, 2017), Bell-LaPadula (Bell & LaPadula, 1973), Role-Based Access Control (Ferraiolo & Kuhn, 1992), Clark and Wilson models (Ge et al., 2004). Therefore, institutions or organizations, particularly libraries, must consider security when granting access to online information resources and must establish information access security policies, i.e., rules and guidelines governing the protection and distribution of information

resources, as well as descriptions of the resources protected and how the resources are protected from misuse and unauthorized use.

Furthermore, convenience in searching for information is an important factor in attracting and creating a relationship between customers and the services rendered by a company or organization. This relationship determines the achievement of the organization's competitive goals (Salehi et al., 2012). Convenience refers to the ability to use technology independently, and ease in searching for information, especially on websites. Library users as consumers have to have preferences and controls (Nykiel, 2001). The convenience aspect of information control also means allowing users to bring food and drink into the library (Gardner & Eng, 2005).

Another important aspect in information searching, both in local databases and web-based systems, is the ease of navigation. The navigation system includes the menu, sitemap, navigation trail, and page view (interface). A good system eases the difficulties faced by users, preventing them from getting lost while searching for information and increasing the effectiveness of information searching (Zheng, 2015). Thus, the information presented through the web or library portal must consider the users' ease of access, as an unattractive interface or complicated menu is tedious and causes users to get lost while searching. The web navigation design also contributes directly to the general user experience in browsing websites and related applications, and there are numerous possible web portal navigation systems and designs, each with corresponding advantages and disadvantages. Libraries must therefore develop web navigation systems based on user behavior in searching for information, not based on content, because the web navigation system helps to increase the number of visits in accordance with user behavior. This also provides convenience for users searching for the information resources presented (Ferguson et al., 2015). Consequently, librarians ought to involve users by conducting a need analysis using observation and survey techniques before designing the website, such as the one conducted by the California State University (Ochoa, 2020).

Speed (timeliness) in information searching is the time required to access available information, measured by comparing the expected time with the actual time expended before information is made available or presented for use (Loshin, 2009). This time is important, especially in the use of a database system, because timeliness in searching contributes significantly to service quality from the user's perspective, and not only applies to manual information searching, but to digital, electronic or automation-based information services (Foley & Helfert, 2010; Li et al., 2021). Therefore, measuring the library service quality in the dimension of information control, must also consider the accessibility of the information provided by the library. The speed of access to information during searching is crucial, depending on the environment or circumstances in the organization in which the database is being used. This aspect is even more crucial in cases where the system is unable to present the information in a timely manner (Omeluzor, 2020), for instance in traffic control, industrial automation, court systems, and programmed stock trading. In database systems, the timeliness aspect is often sacrificed to increase security in information searching. However, research (Ahmed & Vrbsky, 2002) proves that the two aspects are able to run simultaneously without anything being sacrificed. This means that increasing the timeliness of information access while maintaining the security system is possible.

The rapid development of mobile technology has dramatically changed information searching. This is due, in part, to the portability of smartphones enabling ease of information access, irrespective of time and place (Ferguson et al., 2015). A new habit of "accessing information through fingertips" has developed in the community (Zhang & Liao, 2015, p. 62). These changes in lifestyle have implications for libraries. Information service providers must now package and provide easily accessible information

services, as well as simple and uncomplicated navigation, thus allowing users to search for information independently, without the help of librarians (self-reliance). This independence in accessing information is an indicator of the user's control over the unfettered access to information. To maintain independence in seeking information that meets their needs, users need to have the skills to search and use information (Stanziano, 2016).

Self-reliance and self-determination in the search and use of information are crucial, particularly for people from disadvantaged developing countries, including Nigeria, Sri Lanka, Uganda, and Tanzania. Tanzania has developed the principles of Education for Self-Reliance (ESR) and adopted them as the nation's educational philosophy (Sanga, 2016). In ESR, educated people must be self-reliant, responsible, and democratic. This also applies to independent learning, relying on one's own ability while searching for information and knowledge.

According to Tuckett and Stoffle (2016), self-reliant library users are able to conceptualize the type of information and scope needed, solve the problems at hand, define the required steps to find this information, determine the appropriate reference sources to meet information needs, ensure the reference source is available, as well as to determine the quality and reliability of the information obtained through library searches.

Aims

This study aimed to investigate the service quality of the library of UINSU Medan, in terms of information control. Chen (2015) shows that students perceive the quality of information provided by librarians to be so low that they prefer using Google to a library web portal, while Ihejirika et.al. (2021) reveal that users visit the library website so infrequently that the library needs to adopt social media to promote the websites. Therefore, the objectives of this study were to:

1. Evaluate the difference between users' perceptions and minimum expectations of the information quality services of UINSU library
2. Evaluate the difference between users' perceptions and ideal expectations of the information quality services of UINSU library

Methods

Research Approach

This study was carried out in the library of UINSU using a quantitative descriptive method, where the independent variable of information control was measured to recognize service quality. The service quality in this information control dimension was measured using the LibQual instrument.

Population

The population of this study was currently active registered members of the library, with a total number of 49,892 members distributed across various faculties in UINSU (Table 1, Appendix B). Subsequently, 100 completed surveys were obtained from a total population of 49,892.

Research Instrument Development

Based on the LibQual framework in the dimension of information control, the researcher developed a structured questionnaire (Appendix A). The indicators of information control in this study refer to LibQual covering: a) scope of content, including the collection availability and scope offered; b) convenience, including comfort and absence of obstacles in accessing information; c) ease of navigation or ease of access to information resources; d) timeliness, the access time required to find relevant and accurate information; e) equipment or modern devices; f) self-reliance, ensuring the users' independence in using access facilities and various information search instructions in the library. Meanwhile, a semantic differential scale of nine levels was used for grading, with nine being the highest and one being the lowest. Table 3 (Appendix B) shows the indicators distributed into a series of instrument items.

Distribution and Data Collection

The distribution and collection of the questionnaire was conducted using two techniques: visiting classrooms to get representatives from each faculty according to the number of samples from the proportionate random sampling technique (Table 2) and also by visiting the library during its access hours when questionnaires were distributed to undergraduate and graduate students who were using the library. Since the UINSU has two different locations, the researcher visited each library at a different time. The participants were recruited through approaching library visitors and asking whether they had time to answer the questionnaire voluntarily, with no incentives or inducements.

Results

Hypothesis testing was conducted using SPSS software version 25, to determine the mean difference between perceptions, minimum expectations, and ideal expectations, in terms of the dimension of information control within LibQual. Subsequently, the parametric statistical technique paired t-test was used, because the hypothesis testing was performed on two variables (expectations and perceptions) on the same sample continuum. The results of the hypothesis test on information control are shown in Table 4 (Appendix B).

Based on the results of hypothesis testing, the mean of Information Control Perception was 5.43 and the mean of Minimum Expectation of Information Control was 5.85. The results of the paired t-test showed a significant difference of 0.003 between the Information Control Perception and the Minimum Expectation of Information Control. Furthermore, the means of Information Control Perception and Desired Information Control were discovered to be 5.43 and 7.91, respectively, while the paired t-test showed a significant result of 0.000. Based on the basic provisions of the paired t-test, the perception of Information Control was concluded to be different from the Desired Information Control.

A subsequent gap analysis was carried out between the perceptions, minimum expectations, and desired information control of the users. This analysis included the adequacy gap between the users' perceptions and minimum expectations, as well as the superiority gap between the users' perceptions and ideal expectations.

Differences in Users' Perceptions and Minimum Expectations

The adequacy gap analysis value was reviewed to determine the adequacy quality of the library service in the dimension of information control. Meanwhile, the adequacy gap analysis obtained a significant

difference of -0.42, between the average perception (5.43) and minimum expectations (5.85) of users in the dimension of information control (Table 5, Appendix B). Thus, the performance of the information quality and access in the UINSU library has not exceeded the users' minimum expectations. The negative adequacy gap score for the information quality dimension shows that performance has not satisfied users, and indicates the areas for improvement regarding information service quality.

The UINSU library service quality based on the six indicators of the information control dimension is presented in Table 6 (Appendix B). According to Table 6, only the ease of navigation has a perceived value of 6.00, above the users' minimum expectations (5.94). However, this is below the ideal expectation of 8.01. Therefore, of the six information control dimensions, only the perception of ease of navigation indicator is included in the tolerance zone. Thus, the adequacy gap analysis on the ease of navigation indicator obtained a positive score of 0.06. This shows that the service quality of UINSU library regarding easy access to information resources is considered adequate by users.

Meanwhile, the adequacy gap analysis on the other information control indicators all showed negative results. The adequacy gap scores on the scope of content indicator, convenience, timeliness, equipment, and self-reliance were -0.43, -0.77, -0.36, -0.73, and -0.26, respectively. These negative results indicate that the quality of library services regarding the collection availability, convenience in accessing the information, time to find information, modern equipment, and independence of the users, are currently considered inadequate.

Table 7 (Appendix B) shows one item with a perception in the tolerance zone and seven items below the tolerance zone. This produces seven items with negative adequacy gap values and one item with a positive adequacy gap score, namely ease of navigation. Per Table 7, the information quality and access in the UINSU library is considered adequate by users, but only in terms of the library's ability to facilitate information and to ensure users are able to access things independently.

In terms of the adequacy gap, there are seven question items from the information control dimension with negative results: one item in the area of convenience, one item in the area of timeliness, three items in the area of scope of content, one item in the area of modern equipment, and one item in the area of self-reliance. Based on the superiority gap of the 7 question items, the most negative score was obtained by the convenience item (-0.77), followed closely by the equipment category (0.73). This finding suggests that the seven negative question items are areas where the UINSU library services are not acceptable to users and require improvement.

Differences in Users' Perceptions and Ideal Expectations

The results of the service superiority gap analysis were reviewed to determine the difference in the mean value of users' perceptions and ideal expectations, in order to calculate the ideal service quality gap of the UINSU library. The service gap score measurement is presented in Table 8 (Appendix B). The score of the gap analysis on the information control dimension was discovered to be -2.48. This score was obtained from the difference in the mean values of perceptual information control (5.43) and the ideal information control (7.91). The negative results of the service gap analysis on the information control dimension show that the performance of information quality and access in UINSU library is currently unable to exceed the users' ideal expectations. This value does not automatically make service quality in this dimension acceptable, because the perceived value of the information control dimension is outside the tolerance zone, between the minimum (5.85) and ideal (7.91) expectations. Table 9 shows only one of six existing indicators in the dimension of information control, the ease of navigation indicator has a perceived value

above the users' minimum expectations (6.00). This score is between the minimum (5.94) and the ideal expectation (8.01). Thus, of all the information control dimensions, only the perception in the ease of navigation indicator is within the tolerance zone. According to the gap analysis, the ease of navigation indicator obtained a negative value of -2.01, indicating that users' ideal expectations have not been fulfilled. However, this value is acceptable, because the perceived value is in the tolerance zone.

The service quality gap analysis on the scope of content, convenience, timeliness, equipment, and self-reliance indicators also produced negative values. The most negative superiority value (-2.74) was obtained for the convenience indicator, followed by the equipment (-2.66), scope of content (-2.54), self-reliance (-2.48), and timeliness (-2.37) indicators. These negative values show that users' ideal expectations of the five indicators have not been fulfilled and are below the tolerance zone. This also shows the room for improvement in service quality. The quality of service at UINSU library regarding eight items of the dimension of information control is presented in Table 10 (Appendix B). The negative results of the gap analysis on all of the information control dimension items generally indicate that the service quality of the UINSU library, on the aspects of information quality and access to information, does not currently meet the ideal expectations of users. However, the ease of navigation item is acceptable, despite the negative superiority value. This is because the four items are in the tolerance zone (the perception is above the minimum expectation).

The negative score indicating the ease of independent access to information in the UINSU library is currently below users' ideal expectations. Meanwhile, the results of the gap analysis of the other items produced negative scores outside of the tolerance zone. These seven areas of library service therefore require improvement and are not acceptable according to UINSU users. This statement was obtained based on the perceived value of the seven items, and shows the results below the ideal expectations of the users. The convenience aspect was found to obtain the lowest superiority gap score, indicating that users have high expectations for the quality of access to electronic resources, and expect easy access from homes or offices.

Discussion

The quality of library services is assessable from the dimension of information control. According to users, there are at least five aspects that need improvement including convenience, equipment, the scope of content, timeliness, and self-reliance. These aspects show the major problems faced by the UINSU library service. Meanwhile, less severe problems include the library's ability to provide remotely accessible electronic information and provision of equipment that support independent searches in the library to access printed and electronic information sources. Users perceive that the library provides good speed of access time, enabling them to find relevant and accurate information through the library website (https://library.uinsu.ac.id/).

The ease of navigation indicator was concluded to be the only acceptable poor service performance in the information control dimension. This is related to the ease of independent information access in the UINSU library.
Meanwhile, the most unacceptable indicator was convenience, meaning users expect high-quality access to library electronic resources, irrespective of location. The fact that students prefer using Google Search Engine to library databases when seeking information indicates that the library does not provide enough convenient access to the information needed by the users. For this case, Badke (2014) suggests three ways of designing a library portal to be convenient for the users; first, simplify the tools without abandoning the features that make it better than Google and second, help users find convenience in the proprietary

academic search tools by teaching the structure of databases. Since convenience can be regarded as multiple dimensions of the time cost, energy cost, and psychological cost, simplifying the search tool will help improve the quality of information. Convenience of information seeking includes ease of use, ease of access, and immediacy of access to information resources.

In this study, the users were also found to be intolerant of the low performance in other categories. Subsequently, the service aspects regarding the library website, the scope of printed and electronic collections in accordance with user needs, as well as the availability of modern information access equipment, also contribute to the fulfillment of users' expectations in the information control dimension.

The weaknesses of library services in the aspects described above, do not necessarily indicate unavailability of services; for example, the UINSU library was found to have subscribed to various electronic journal databases including Emerald Insight, Ebscohost, and Cambridge Core, in addition to making computers available. Furthermore, the website https://library.uinsu.ac.id/ was made available to provide access to various information sources. However, the low scores given by users on the aspects above indicate problems of information quality and access to library services, and the need for increased promotional activities.

Promotion is an important factor for the use of information sources owned by libraries, as it serves as an effort to socialize the library's services and numerous information sources, and to educate users (Patil & Pradhan, 2014). Also, exhibitions have had a significant impact on the use of information sources (Delawska-Elliott et al., 2015). Library users additionally reported that the promotion of library information sources through social media including Twitter, Facebook, and Instagram, triggered them to pay more attention. Several studies have shown that the use of social media networks is effective in promoting activities or services (Islam & Habiba, 2015; Quadri & Adebayo Idowu, 2016). A study by Salisbury et al. (2012) shows that students also use social media to follow professors and library services. The ineffective use of social media as a means of engaging library users was discovered to be due to inadequate purpose and planning in the social media marketing approach (Ihejirika et al., 2021). In addition, since September 2018, the UINSU library has made efforts to reach the public, especially the university's students, by using the library's Instagram account. Research shows that the use of social media for library promotion has proven to be effective to build trust and relationships with library users (Lund & Wang, 2021). Also, a library festival is held at the end of each year, with various promotional activities and library value campaigns targeted at users. Furthermore, training activities for journal databases are conducted, in relation to efforts for promoting electronic information sources. These databases are introduced to various departments in the UINSU Medan, and some of the activities are conducted for postgraduate students at both masters and doctoral levels.

The library needs to manage marketing and promotional activities by formally setting a plan at the beginning of each year and conducting program evaluation at the end (Delawska-Elliott et al., 2015). Richardson and Kennedy (2014) suggest nine components of a marketing cycle, they are: project description, current market, SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats), target market, marketing goals and objectives, marketing strategies, action plan, management, and assessment. In summary, librarians need to be aware that marketing library information services is an integral part of librarians' activities (Bedenbaugh, 2016).

Conclusion

This study suggests that there is a need for the improvement of information service quality. Therefore, the UINSU library should consider improving convenience, equipment, the scope of content, timeliness, and self-reliance aspects in information services. Academic libraries serve students at different level of studies, as well as lecturers, and researchers who might have different information needs. Therefore, providing information to these user groups also needs to be taken into account. Each user group, including lecturers, undergraduate, postgraduate, and doctorate students, as well as researchers ought to be represented in the library's information provision. However, Kayongo and Jones (2008) showed that satisfying each user group is a challenge for libraries. Nevertheless, today's Generation Y requires libraries to be accessible 24/7, which means that libraries must provide facilities that ensure accessibility at all times.

Although incorporating social media to promote information access has proven effective (Islam & Habiba, 2015), it is not sufficient to just teach users information skills. Further, if social media is used to promote information access, it must be well-organized (Ihejirika et al., 2021), planned carefully, and executed regularly (Patil & Pradhan, 2014). In addition, academic libraries must conduct library instruction programs on a regular basis as part of their outreach, to provide assistance to those users needing to improve their skills

Libraries should consider using tools such as LibQual to analyze user information needs and continuously improve the quality of information control services. Ignoring these aspects of managing and presenting information will produce lower levels of user satisfaction and increase the gap between perception and ideal expectations. The library needs to conduct well-planned library promotional activities to market its digital products (including journal subscriptions) to users, keeping in mind that social media platforms, such as Facebook, have proven to be effective for promoting library information content. Libraries can employ mixed methods approaches, formally and informally, to educate users about information literacy skills so that they can be independent in searching for and using information to solve problems.

The present study was conducted at an Islamic university in Southeast Asia, but the findings are consistent with studies from other countries. Thus, the results from the present study provide strong evidence to suggest that, in general, universities should provide required resources and funding for libraries to improve information services to ensure that libraries meet quality standards. The present study also provides insight into how universities, in general, might allocate funds for collection development and modern equipment, as well as resources for user education. The study contributes to the extant literature by revisiting the LibQual model (Association of Research Libraries, n.d.)

This study is limited in that this work is preliminary and further research on how to implement information literacy courses into the curriculum needs to be conducted. In-depth research regarding strategies for academic libraries to enhance library quality is also required.

Author Contributions

Retno Sayekti: Conceptualization, Software, Writing – review & editing **Muhammad Aditya:** Methodology, Data curation and analysis **Nurhayani:** Writing – original draft **Tessa Simahate:** Visualization, Investigation **Yusniah:** Supervision **Rina Devianty:** Validation

References

Ahmed, Q. N., & Vrbsky, S. V. (2002). Maintaining security and timeliness in real-time database system. *Journal of Systems and Software*, *61*(1), 15–29. https://doi.org/10.1016/S0164-1212(01)00111-X

Association of Research Libraries. (n.d.). *LibQUAL+ charting library service quality*. http://www.libqual.org

Atkinson, J. (2016). Reviews of library services: An overview. In *Quality and the academic library: Reviewing, assessing and enhancing service provision.* (pp. 57–60). Chandos Publishing. https://doi.org/10.1016/B978-0-12-802105-7.00006-3

Badke, W. (2014). The convenience factor in information seeking. *Online Searcher*, *38*(6). https://www.infotoday.com/OnlineSearcher/Articles/InfoLit-Land/The-Convenience-Factor-in-Information-Seeking-100274.shtml?

Bedenbaugh, R. A. (2016). Marketing is our game: Tackling the library awareness gap. *Public Services Quarterly*, *12*(4), 321–328. https://doi.org/10.1080/15228959.2016.1231603

Bell, D., & LaPadula, L. J. (1973). Secure computer systems: Mathematical foundations. In *MITRE Technical Report 2547* (Vol. 1, Issue MTR-2547). http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=AD0770768%5Cnhttp://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=AD0770768

Blixrud, J. C. (2002). Library quality assessment: LibQUAL+™. *Statistics in Practice – Measuring & Managing*, 155–161. https://www.lboro.ac.uk/microsites/infosci/lisu/downloads/statsinpractice-pdfs/blixrudposter.pdf

Chen, Y. H. (2015). Testing the impact of an information literacy course: Undergraduates' perceptions and use of the university libraries' web portal. *Library & Information Science Research*, *37*(3), 263–274. https://doi.org/10.1016/j.lisr.2015.04.002

Delawska-Elliott, B., Grinstead, C., & Martin, H. J. (2015). Developing a marketing orientation in hospital library services: A case report. *Medical Reference Services Quarterly*, *34*(4), 481–489. https://doi.org/10.1080/02763869.2015.1082390

Edgar, B. (2006). Questioning LibQUAL+: Critiquing its assessment of academic library effectiveness. *Proceedings of the American Society for Information Science and Technology*, *43*(1), 1-17. https://doi.org/10.1002/meet.14504301112

Ferguson, A. M., McLean, D., & Risko, E. F. (2015). Answers at your fingertips: Access to the internet influences willingness to answer questions. *Consciousness and Cognition*, *37*, 91–102. https://doi.org/10.1016/j.concog.2015.08.008

Foley, O., & Helfert, M. (2010). Information quality and accessibility. In T. Sobh (Ed.), *Innovations and advances in computer sciences and engineering.* (pp. 477–481). Springer. https://doi.org/10.1007/978-90-481-3658-2

Gardner, S., & Eng, S. (2005). What students want: Generation Y and the changing function of the academic library. *portal: Libraries and the Academy*, *5*(3), 405–420. https://doi.org/10.1353/pla.2005.0034

Ge, X., Polack, F., & Laleau, R. (2004). Secure databases: An analysis of Clark-Wilson model in a database environment. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, *3084*, 234–247. https://doi.org/10.1007/978-3-540-25975-6_18

Huang, H., Kai Wah Chu, S., Yuyang Liu, L., & Yi Zheng, P. (2017). Understanding user-librarian interaction types in academic library microblogging: A comparison study in Twitter and Weibo. *The Journal of Academic Librarianship*, *43*(4), 329–336. https://doi.org/10.1016/j.acalib.2017.06.002

Ihejirika, K. T., Goulding, A., & Calvert, P. (2021). Rethinking academic library use of social media for marketing: Management strategies for sustainable user engagement. *Journal of Library Administration*, *61*(1), 58-85. https://doi.org/10.1080/01930826.2020.1845547

Islam, M. M., & Habiba, U. (2015). Use of social media in marketing of library and information services in Bangladesh. *DESIDOC Journal of Library and Information Technology*, *35*(4), 299–303. https://publications.drdo.gov.in/ojs/index.php/djlit/article/view/8455/4982

Islamy, M. A., Wahyudin, D., & Margana, H. H. (2016). Analisis tingkat kepuasan pemustaka tentang kualitas layanan perpustakaan dengan menggunakan metode libqual+tm : studi deskriptif di perpustakaan pusat institut teknologi bandung. *Edulib Info*, *3*(1), 1–11. https://ejournal.upi.edu/index.php/edulibinfo/article/view/9042/5634

Kayongo, J., & Jones, S. (2008). Faculty perception of information control using LibQUAL+™ indicators. *The Journal of Academic Librarianship*, *34*(2), 130–138. https://doi.org/10.1016/j.acalib.2007.12.002

Khadka, K., & Maharjan, S. (2017). *Customer satisfaction and customer loyalty* (Thesis, Centria University of Applied Sciences). https://www.theseus.fi/bitstream/handle/10024/139650/khadka_kabu_and maharjan__soniya.pdf?sequence=1&isAllowed=y

Lampson, B. W. (1974). Protection. *Information Sciences*, 18–24.

Li, H., Chen, Z., & Guo, Q. (2021). The evolution and approaches of information analysis service of university libraries in China. *Science & Technology Libraries*, *40*(1), 52-64. https://doi.org/10.1080/0194262X.2020.1830921

Loshin, D. (2009). Data quality and MDM. In D. Loshin (Ed.), *Master data management.* (pp. 87–103). Morgan Kaufmann. https://doi.org/10.1016/b978-0-12-374225-4.00005-9

Lund, B. D., & Wang, T. (2021). Information dissemination and interactions in higher education social media posts. *Journal of Promotion Management*, *27*(4), 547-561. https://doi.org/10.1080/10496491.2020.1851848

McCaffrey, C. (2019). Transforming the university library one step at a time: A ten year LibQUAL + review. *New Review of Academic Librarianship*, *25*(1), 59–75. https://doi.org/10.1080/13614533.2018.1511438

Mudarri, T., & Abdo Al-Rabeei, S. (2015). Security fundamentals : Access control models. *International Journal of Interdisciplinarity in Theory and Practice*, *7*, 259–262. http://www.itpb.eu/index.php/ct-menu-item-3/15-economics/193-7-cislo-48-clanok

Nunes Leal Franqueira, V. (2006). *Access Control from an Intrusion Detection Perspective*. (CTIT Technical Report Series; No. 06-10). Centre for Telematics and Information Technology (CTIT)

Nur, M., & Seran, M. S. B. (2020). Service quality of border region higher education libraries. *Jurnal Ad'ministrare*, *6*(2), 145. https://doi.org/10.26858/ja.v6i2.12429

Nwachukwu, V. N., Lucky, A. T., & Salami, P. F. (2014). Availability, accessibility and use of information resources and services among information seekers of Lafia Public Library in Nasarawa State. *Information and Knowledge Management*, *4*(10), 1–12. https://core.ac.uk/download/pdf/234671811.pdf

Nykiel, R. A. (2001). Technology, convenience and consumption. *Journal of Hospitality & Leisure Marketing*, *7*(4), 79-84. https://doi.org/10.1300/J150v07n04_07

Ochoa, I. V. (2020). Navigation design and library terminology: Findings from a user-centered usability study on a library website. *Information Technology and Libraries*, *39*(4). https://doi.org/10.6017/ital.v39i4.12123

Omeluzor, S. U. (2020). Evaluation of Integrated Library System (ILS) use in university libraries in Nigeria: An empirical study of adoption, performance, achievements, and shortcomings. *Evidence Based Library and Information Practice*, *15*(4), 49–67. https://doi.org/10.18438/eblip29604

Patil, S. K., & Pradhan, P. (2014). Library promotion practices and marketing of library services: A role of library professionals. *Procedia - Social and Behavioral Sciences*, *133*, 249–254. https://doi.org/10.1016/j.sbspro.2014.04.191

Patil, S., & Sawant, S. (2017, January 24-25). *Service quality expectations of academic library users* [Paper presentation]. National Conference on Enhancing the Role of the Library in Teaching and Learning, Pune, Maharashtra, India. http://eprints.rclis.org/32356/

Plum, T. (1994). Academic libraries and the rituals of knowledge. *RQ*, *33*(4), 496–508. https://www.jstor.org/stable/20862529

Porat, L. (2013). Marketing and assessment in academic libraries: A marriage of convenience or true love? *Evidence Based Library and Information Practice*, *8*(2), 60–67. https://doi.org/10.18438/b8fs5m

Quadri, G. O., & Adebayo Idowu, O. (2016). Social media use by librarians for information dissemination in three federal university libraries in Southwest Nigeria. *Journal of Library & Information Services in Distance Learning*, *10*(1–2), 30–40. https://doi.org/10.1080/1533290X.2016.1156597

Richardson, H. A. H., & Kennedy, M. R. (2014). How to market your library's electronic resources. *The Serials Librarian*, *67*(1), 42–47. https://doi.org/10.1080/0361526X.2014.899289

Roszkowski, M. J., Baky, J. S., & Jones, D. B. (2005). So which score on the LibQual+™ tells me if library users are satisfied? *Library & Information Science Research*, *27*(4), 424–439. https://doi.org/10.1016/j.lisr.2005.08.002

Salehi, F., Abdollahbeigi, B., Langroudi, A. C., & Salehi, F. (2012). The impact of website information convenience on e-commerce success of companies. *Procedia - Social and Behavioral Sciences*, *57*, 381–387. https://doi.org/10.1016/j.sbspro.2012.09.1201

Salisbury, L., Laincz, J., & Smith, J. J. (2012). Science and technology undergraduate students' use of the internet, cell phones and social networking sites to access library information. *Issues in Science and Technology Librarianship*, *69*. https://doi.org/10.5062/F4SB43PD

Sanga, I. (2016). Education for self reliance: Nyerere's policy recommendations in the context of Tanzania. *African Research Journal of Education and Social Sciences*, *3*. http://arjess.org/education-for-self-reliance-nyereres-policy-recommendations-in-the-context-of-tanzania/

Stanziano, S. (2016). Information seeking behavior of older adults. *The Serials Librarian*, *71*(3–4), 221–230. https://doi.org/10.1080/0361526X.2016.1230532

Thompson, B., Kyrillidou, M., & Cook, C. (2009). Item sampling in service quality assessment surveys to improve response rates and reduce respondent burden: The "LibQUAL+® Lite" example. *Performance Measurement and Metrics*, *10*(1), 6–16. https://doi.org/10.1108/14678040910949657

Tuckett, H. W., & Stoffle, C. J. (2016). Learning theory and the self-reliant library user. *Reference & User Services Quarterly*, *24*(1), 58–66. http://www.jstor.org/stable/25827283

Verification and Test Methods for Access Control Policies / Models, NIST Special Publication 800-192 68 (2017). https://doi.org/10.6028/NIST.SP.800-192

Zhang, J., & Liao, B. (2015). Learning on the fingertips: The opportunities and challenges of educational apps. *Journal of Education and Practice*, *6*(20), 62–67. https://iiste.org/Journals/index.php/JEP/article/view/24198/24771

Zheng, G. (2015). Web navigation systems for information seeking. In M. Khosrow-Pour (Ed.), *Encyclopedia of information science and technology.* (pp. 7693–7701). IGI Global. https://doi.org/10.4018/978-1-4666-5888-2.ch758

Appendix A
Survey

As a user, you can provide input about your perceptions and expectations on the library services of State Islamic University of North Sumatra (UINSU) Medan regarding,

1. Attitude and performance of UIN SU librarian
2. Facilities and access to UIN SU library
3. UIN SU library as a place of

<u>Respondent Identity</u>
1. Name   : ……………………………
2. Student ID Number   :……………………………
3. Gender   : ……………………………
4. Major/Study Program   : ……………………………
5. Level (Bachelor/Magister/Doctor)   : ……………………………

Part I: <u>Activities at the library</u>
In this section, please put a cross (x) on one of the items you choose.
1. During your time as a student, did you visit and take advantage of the library service more than once?
   a. Yes (please go to number 2)
   b. No (You do not need to answer the next question. Thank you)
2. How often do you take advantage of library services and facilities?
   a. Rarely
   b. Once a week
   c. Twice a week
   d. More than twice a week

Give your reasons for visiting the library.
……
……
………………………………………
3. How often do you access library information sources through the web?
   e. Rarely
   f. Once a week
   g. Twice a week
   a. More than twice a week

Give your reasons
……
………
………………………………………

Part II. Perceptions on the Quality of Information Control of UINSU Library Services

Direction:

You are asked to provide a perception regarding the quality of library services, specifically the quality you know and feel.

There are no wrong answers. Put a checkmark (✓) on one of the numbers you choose and give your reasons. The answer option is determined as follows.

     a. Number (1) means low perception.

     b. Number (9) means your perception is high.

The higher the score, the higher the grade of the aspect in question.

No.	Library Service As far as I know and feel	Try not to choose neutral answers.

1. *The library's electronic resources can be accessed from my home or office*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9
Strongly disagree   Strongly Agree

2. *The library website allows me to search for information independently*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9
Strongly disagree   Strongly Agree

3. *The library has the printed materials I need for my work*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9
Very Minimal   Very Large

4. *The library has the electronic resources I need*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9
Very Minimal   Strongly Agree

5. *The library has modern equipment that helps access the information I need*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9
Strongly disagree   Strongly Agree

6. *The library has access tools that are easy to use and helps find things independently*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9
Strongly disagree   Strongly Agree

7. *The library makes information easy to be accessed independently*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9
Strongly disagree   Strongly Agree

8. *The library has printed and electronic collections needed for my work*

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
1   2   3   4   5   6   7   8   9

Appendix B

Table 1
Active User of North Sumatra State Islamic University (UINSU) Medan Library

Faculty/Department Affiliation	Active Library Members
Da'wah and Communication	3,692
Islamic Economics and Business	8,458
Social Sciences	2,032
Tarbiyah and Teacher Training	18,532
Public Health	1,469
Science and Technology	3,099
Sharia and Law	5,178
Ushuluddin and Islamic Studies	3,016
Postgraduate	4,416
Total	49,892

Table 2
Sample Based on Proportional Random Sampling Technique

Faculty/Department Affiliation	Sub Population	Sample	Sum of rounding results
Da'wah and Communication	3,692	$\frac{3692 \times 100}{49892}$	7
Islamic Economics and Business	8,458	$\frac{8458 \times 100}{49892}$	17
Social Sciences	2,032	$\frac{2032 \times 100}{49892}$	4
Tarbiyah and Teacher Training	18,532	$\frac{18532 \times 100}{49892}$	38
Public Health	1,469	$\frac{1469 \times 100}{49892}$	3
Science and Technology	3,099	$\frac{3099 \times 100}{49892}$	6
Sharia and Law	5,178	$\frac{5178 \times 100}{49892}$	10
Ushuluddin and Islamic Studies	3,016	$\frac{3016 \times 100}{49892}$	6
Postgraduate	4,416	$\frac{4416 \times 100}{49892}$	9
Total		**49892**	**100**

Table 3
Item Distribution

Variable	Indicator	The number of item (s)
Information Control	*Scope of content*	3
	Convenience	1
	Ease of navigation	1
	Timeliness	1
	Modern equipment	1
	Self-reliance	1

Table 4
The Result of Hypothesis Testing

Dimension	Score		T mean	Significance	Description
ICP – MEIC	5,43	5,85	-0,42	0,003	Significant different
ICP – DIC	5,43	7,91	-2,48	0,000	Significant different

Table 5
Adequacy Gap Score in the Information Control Dimension

Description	P	ME	AG
Information Control **(information quality and access)**	5,43	5,85	-0,42

Table 6
Adequacy Gap Score of Minimum Expectation

Indicator	P	ME	AG
a. Scope of content	5.42	5.85	-0.43
b. Convenience	4.95	5.72	-0.77
c. Ease of navigation	6.00	5.94	0.06
d. Timeliness	5.49	5.85	-0.36
e. Equipment	5.20	5.93	-0.73
f. Self-reliance	5.53	5.79	-0.26

Table 7
Adequacy Gap Score per Questions Item

Indicator	Question	P	ME	AG
Convenience	The electronic resources in UINSU library can be accessed from my home or office	4.95	5.72	-0.77
Timeliness	The website of UINSU library allows me to search for information independently	5.49	5.85	-0.36
Scope of content	The library has the printed materials I need for my work	5.51	5.77	-0.26
Scope of content	The library has the electronic resources I need	5.38	5.89	-0.51
Scope of content	The library has print and/or electronic collections for my work	5.37	5.90	-0.53
Modern equipment	The library has modern equipment facilitating me to access the information I need	5.20	5.93	-0.73
Self-reliance	The library has access tools that are easy to use and allow me to find things independently	5.53	5.79	-0.26
Ease of navigation	The library makes information easy to be accessed independently	6.00	5.94	0.06

Table 8
The Superiority Gap Score

Description	P	DIC	SG
Information Control (information quality and access)	5,43	7,91	-2,48

Table 9
The Superiority Gap Score of Each Indicator

Indicator	P		DIC	SG
a. Scope of content	5.42		7.96	-2.54
b. Convenience	4.95		7.69	-2.74
c. Ease of navigation	6.00		8.01	-2.01
d. Timeliness	5.49		7.86	-2.37
e. Modern equipment	5.20		7.86	-2.66
f. Self-reliance	5.53		8.01	-2.48

Table 10
The Superiority Gap Score per Question Item

Indicator	Question	P	DIC	SG
Convenience	The electronic resources in UINSU library can be accessed from my home or office	4.95	7,69	-2.74
Timeliness	The website of UINSU library allows me to search for information independently	5.49	7.86	-2.37
Scope of content	The library has the printed materials I need for my work	5.51	7.88	-2.37
Scope of content	The library has the electronic resources I need	5.38	7.92	-2.54
Scope of content	The library has print and/or electronic collections for my work	5.37	8.07	-2.70
Modern equipment	The library has modern equipment facilitating me to access the information I need	5.20	7.86	-2.66
Self reliance	The library has access tools that are easy to use and allow me to find things independently	5.53	8.01	-2.48
Ease of navigation	The library makes information easy to be accessed independently	6.00	8.01	-2.01