

The Measureable Effects of Closing a Branch Library: Circulation, Instruction, and Service Perception

Jessica Lange, Amber Lannon, and Dawn McKinnon

abstract: This article explores the closing of the Howard Ross Library of Management at McGill University, Montreal, Canada. We hypothesized that closing a branch library would result in a decline in the use of library services. We measured library service using circulation statistics, library instruction workshop statistics, and data from the online survey LibQUAL+®. Our hypothesis was supported for instruction but was not proved for circulation statistics nor for service perception as evaluated using LibQUAL+®.

Introduction

Across North America, academic libraries are closing branches and merging libraries. This trend has been fueled by the growth of electronic resources, the declining circulation of print materials, cuts to library budgets, and decreasing reference statistics, as well as the increasingly interdisciplinary nature of academic research. While some articles describe the “how” or “why” behind these events, there is an absence of articles in the literature that focus on the measurable effects of these closures on the demand for services and on the perception of service.

In 2011, the Howard Ross Library of Management at McGill University in Montreal, Canada, was merged into the Humanities and Social Sciences Library. The decision to close the Management Library mirrors themes found within the Association of College and Research Libraries (ACRL) SPEC (Systems and Procedures Exchange Center) Kit on Branch Libraries: financial constraints, lack of space within the Faculty of Management, proximity to the main library branch, and decreasing dependence on physical resources.¹ While there is literature that focuses on the logistics, the decision processes

portal: Libraries and the Academy, Vol. 14, No. 3 (2014), pp. 633–651.

Copyright © 2014 by Johns Hopkins University Press, Baltimore, MD 21218.

that lead to a library branch closure, or both, few authors discuss the aftereffects of these decisions. We hypothesized that closing a branch library would decrease the use of print materials and requests for library instruction workshops as well have a negative impact on service perceptions. To investigate these hypotheses, we compared circulation, library workshop statistics, and LibQUAL+® results from before and after the closure to quantify the effects of this decision on the library’s primary user groups. LibQUAL+® uses a set of questions to help libraries assess users’ perceptions of their services and to gauge user satisfaction. Given the continuing instability of the economic climate as well as the trend toward the centralization of library resources, this article is relevant to library administrators and those with decision-making responsibilities for academic libraries.

Context and Literature Review

In fall 2010, McGill University began to renovate its Management Library. To prepare for this renovation, the collection was moved to the Humanities and Social Sciences Library (hereafter referred to as the Humanities Library) in December 2010. A temporary library service point comprised of staff, course materials, and several specialized computer terminals remained in the Faculty of Management building. The decision to close the library, as opposed to completing the renovations, happened in January 2011. However, the temporary service point remained open until September 2011, at which time the staff and the remaining library materials were integrated into the Humanities Library. See Table 1 for the timeline of events.

Table 1.
Timeline of branch closure at Management Library

Time	Event
January 2011	<ul style="list-style-type: none">• Management Library space closes• Print collection (except course reserves) moves to Humanities Library but maintains separate location status from Humanities materials• Temporary library service point opens in Faculty of Management
September 2011	<ul style="list-style-type: none">• Temporary library service point closes
January 2012	<ul style="list-style-type: none">• Former Management Library space reopens as student and classroom space in the Faculty of Management
August 2012	<ul style="list-style-type: none">• Management materials completely integrated into Humanities Library. Status no longer indicates management in the library catalog.

Steve Hiller outlines in detail the various criteria for determining whether a branch library should be closed or merged. Among the considerations for such decisions are use, primary user population, library dependency of primary user community, and facility quality.² Using these criteria, the Management Library was a candidate for closure. Although it had a large primary user population of approximately 2,800 full-time and part-time students and more than 70 full-time faculty members, the use of physical materials by students and faculty was low in comparison to other library branches on campus. At the time of its closure, the Management Library had one of the lowest circulation statistics for its regular monograph collection. Only the Birks Reading Room, Osler Library of the History of Medicine, and the Geographic Information Centre, three significantly smaller circulating collections with smaller user populations, had lower circulations. In the 2010–2011 fiscal year, for example, the Management Library had one-quarter of the regular monograph loans that the Education Library had, yet the Education Library is comparable in the size of its collection and its user population. See Table 2 for circulation statistics and information on loans per patron at McGill University Library branches.

Table 2.
Number of loans and loans per patron at McGill library branches
(2010–2011)

Branch library	Loans	Number of full-time and part-time students enrolled in corresponding faculty	Loans per patron*
Birks Reading Room (Religious Studies)	2,173	93	23.4
Education	19,277	2,680	7.2
Geographic Information Centre	266	n/a	n/a
Humanities and Social Sciences	255,298	7,936	32.2
Islamic Studies	10,468	n/a	n/a
Life Sciences	12,783	5,089	2.5
Macdonald Campus (Agricultural & Environmental Sciences)	7,189	1,792	4
Howard Ross Management	5,372	2,800	1.9
Marvin Duchow Music	44,370	827	53.6
Nahum Gelber Law	18,348	812	22.6
Osler Library of the History of Medicine	3,214	n/a	n/a
Schulich Science & Engineering	29,048	9,398	3.1

*This is a rough estimate based on the number of full-time and part-time students in each faculty. Some branch libraries do not correlate directly with a particular faculty, and thus this measurement is not applicable to those branches.

In Management, as in many other disciplines, there was an increasing dependency on online materials and a decreasing demand for materials available only in print. Although Laurie M. Bridges's study did not indicate that Management students are heavier users of electronic resources than students in other disciplines, the general trend to obtaining more materials online combined with low circulating numbers for the physical collection

...the increase of electronic resources diminished the need for a physical library or at least a print collection.

reduced the library dependency of the primary user community.³ As noted by Brian Winterman and J. B. Hill as well as by Barton Lessin, the increase of electronic resources diminished the need for a physical library or at least a print collection.⁴ This point is often debated with the rise of literature supporting the importance of the "library as a place." For example, Karen Antell and Debra Engel discovered, contrary to their expectations, that younger scholars

more than older scholars felt that the library was a valuable place for scholarship and contemplation.⁵ Likewise, Jeffrey T. Gayton notes, "If gate counts are rising while print circulation and use of reference services are falling, users must be finding something else of value in academic libraries. What they value is a place to engage in communal study."⁶ In the Management Library, gate counts had been steadily increasing, peaking at 240,000 visits per year just before the closure. In this respect, the Management Library, as a place for interaction among students, was firmly rooted throughout the Desautels Faculty of Management. However, "library as a place" was not a persuasive argument for keeping the facility open in light of several other factors: the Management Library's close physical proximity to the Humanities Library, McGill's large, central library branch; the need for renovation of the current space and the severe lack of space within the Faculty of Management itself as its program continued to grow within a building that already could not accommodate its current student population. Beyond increasing the space available within the Faculty of Management, there were also advantages for students. With materials housed in the large, central Humanities Library, students could take advantage

...having the Management collection integrated alongside the other social sciences was beneficial to students and faculty in many disciplines.

of longer opening hours in which to access the physical collection and to study. Also, given the interdisciplinary nature of Management—including, for example, such fields as psychology, sociology, international development, and economics—having the Management collection integrated alongside

the other social sciences was beneficial to students and faculty in many disciplines.

Budget concerns were also important to the library. Such financial considerations are not unusual. According to the SPEC Kit on "Branch Libraries and Discrete Collections," the most often-cited reason for closing a branch library was budget cuts or funding.⁷

The literature contains several articles that provide case studies of particular branches closing; however, these articles focus primarily on the decisions behind the closure as well as the logistics for moving a collection, staff, and equipment.⁸ They do not provide any quantitative analysis of the effects of these decisions. For example, Mary Ann

Griffin provides a review of five case studies of libraries that articulates the problems associated with closing branch libraries and guidelines for carrying out a successful closure.⁹ Similarly, Linda Weber and Ruth Britton provide step-by-step instructions for moving a collection and integrating a library.¹⁰ Jian-Zhong (Joe) Zhou and Leilani Hall provide a basic discussion of the drawbacks following a closing as well as reference statistics before and after, but the discussion is minimal.¹¹ Veronica Calderhead outlines anecdotally some effects of the decision to close the Chemistry Library at Rutgers, the State University of New Jersey in Newark, but she does not include any quantitative analysis.¹² Thus although there is significant literature surrounding branch closures, there is little discussion and analysis of the effects of these actions.

Methods

To determine the effects of the branch closure, we looked at three metrics: circulation, library instruction workshops provided, and LibQUAL+® results from before and after the closure. We chose these metrics partly because of their ability to reflect the various roles libraries have within their communities but also to ensure the comparability of statistics before and after the closure.

We collected circulation statistics via McGill's integrated library system, ALEPH, through which users access the libraries' online catalog and collections, as well as a multitude of other resources. The circulation numbers reflect what is called "initial loans." Initial loans are the first transaction in the loan process (that is, the initial act of borrowing). They do not reflect renewals or returns. We assembled the initial loan statistics from the regular collection during the period January 2009 to December 2012. The regular collection is made up of materials, primarily books but also journals and a limited number of audiovisual materials, which are housed in the open-stacks collections. It does not include items that are being used for courses, which are known locally as the reserve collection.

Instruction statistics reflect the number of in-class library workshops taught by Management librarians in the Faculty of Management. Professors request workshops, and librarians link the content of the workshops to specific assignments in the classes. Workshops vary in length from fifteen to ninety minutes. Topics covered generally include how to do research and find sources for assignments in the subject, such as marketing, information systems, operations management, finance, organizational behavior, strategy, and international business. Some in-class workshops, particularly those at the beginning of the school year, focus on a general library introduction, proper citation style, or both. Workshops were held in classrooms in the Faculty of Management during class time both before and after the closure.

We chose to use LibQUAL+® because it is a validated instrument and is employed extensively within the academic library community to assess service standards.

According to the Association of Research Libraries, the organization that offers LibQUAL+®, the product is a "suite of services that libraries use to solicit, track, un-

derstand, and act upon users' opinions of service quality."¹³ The LibQUAL+® survey has run at McGill at intervals since 2002 (2002–2005, 2008, 2010, and 2012). We chose to use LibQUAL+® because it is a validated instrument and is employed extensively within the academic library community to assess service standards. Additionally, the survey questions from LibQUAL+® did not change from year to year, and the number of respondents from Management remained consistent. We extracted responses from Management students, staff, and faculty from the larger data set. Pulling out these responses allowed for a before-and-after comparison.

Like any survey instrument, LibQUAL+® is not free from criticism. For example, William H. Walters is skeptical that undergraduate students have the requisite knowledge and expertise to make valid judgments on certain areas of library service quality (for example, the comprehensiveness of the print collection or how well library staff understand patrons' needs).¹⁴ However, we believe that, in our situation, the results from LibQUAL+® provided valuable insights into user opinions before and after the closure, particularly because we chose not to focus on changes to individual questions but rather changes to overall perceptions in larger categories (such as library as a place, affect of service, and information control). Additionally, it is debatable whether all the categories that Walters disputes as being beyond the level of an undergraduate to assess are in fact so.

Results

Effects on the Circulation of Materials

A unique aspect of the Management Library closure was that, although McGill University Library relocated most of the physical materials to the Humanities Library in December 2010, data could continue to be extracted separately for the Management Library collection because the books were marked "management" in the staff view of the records. The patron view, however, reflected only the books' new physical location in the Humanities Library. The notations in staff records enabled us to extract circulation statistics for the Management Library's regular monograph collection even though it was now housed in the Humanities Library. These statistics provided an ideal situation for determining the effects of proximity on the circulation of materials. We expected that, with the collection farther away, even if it was a short walk, there would be a significant decrease in

Our initial hypothesis that the circulation of Management Library materials would significantly decrease following the closure was not confirmed.

the use of the Management Library's monograph collection. We based this assumption upon literature regarding circulation of remote storage materials. J. B. Hill, Cherie Madarash-Hill, and Nancy Hayes showed a decrease in use after items were relocated to storage. Although storage is not completely analogous to moving materials to another library, the article demonstrated at a basic level the effects of proximity on circulation.¹⁵ We also based this assumption on past experience with our users, and understanding that they prefer to locate items



quickly with minimal obstacles. We used the circulation statistics from the Humanities Library as a control group.

Our initial hypothesis that the circulation of Management Library materials would significantly decrease following the closure was not confirmed. Due to a consistent trend from the last few years, we expected that circulation statistics would fall in both branches, but we additionally thought that the Management branch statistics would drop by a much larger amount than circulation in the Humanities Library. What we found was that, although the percentage change

Our initial hypothesis that the circulation of Management Library materials would significantly decrease following the closure was not confirmed.

in loans decreased more for Management books than humanities books during the year of the closure, 18 percent versus 14 percent, this decline was followed by a rebound in 2012. In fact, the total number of loans from the Management Library’s collection decreased from 2009 to 2012 by less than the Humanities Library (20 percent versus 23 percent) (see Table 3). We do not have circulation information on the Management Library collection after January 2013. As a result, we are unable to confirm whether this trend continued.

Table 3.
Total initial loans during winter semester for the Management and Humanities libraries (January 2009–December 2012)

Year	Loans, Management Library	Loans, Humanities Library	% change from previous year, Management Library	% change from previous year, Humanities Library
2009	5,644	243,757	n.a.	n.a.
2010	6,046	228,808	–9	–6
2011	4,951	196,466	–18	–14
2012	4,862	176,673	–2	–10
2010 to 2012			–20	–23

Effects on In-Class Library Workshops

Without a physical library presence within the Faculty of Management, there was concern amongst the librarians that instructors would request fewer in-class library workshops. Figure 1 illustrates the number of in-class library workshops given each year since 2005. It shows that professors asked for fewer workshops after the closure in 2010. This finding suggests that our hypothesis was supported and that there were negative effects on

library instruction statistics following the closure of the Management Library. Before, during, and after the branch closure, workshops were held in the classrooms where the courses take place, and the content of the workshops was typically tied to assignments, to maximize student attendance and engagement. Course subjects for these workshops included marketing, information systems, operations management, finance, organizational behavior, strategy, and international business.

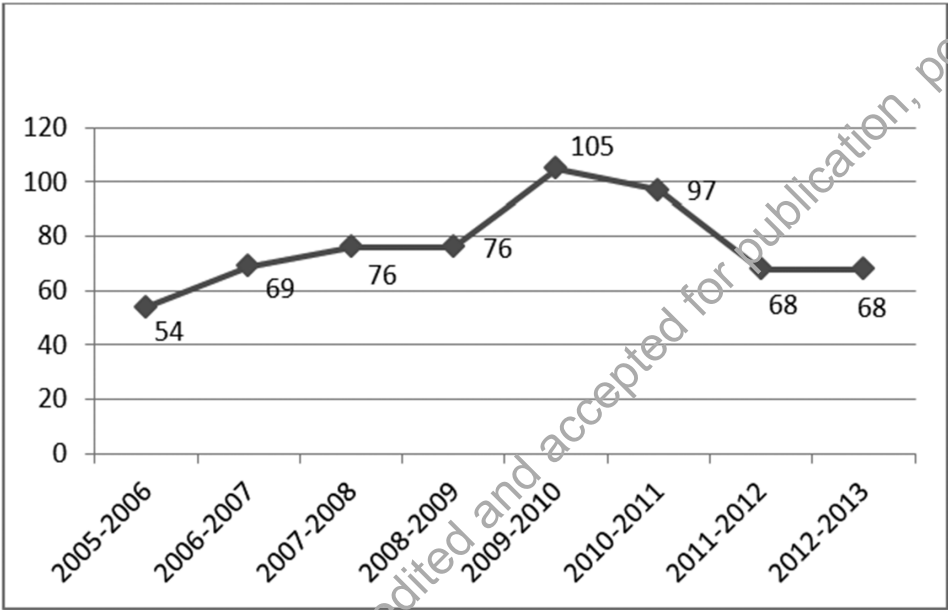


Figure 1. Number of in-class library workshops given each year, 2005 to 2012

It is plausible to suggest that a decrease in the number of professors, the number of students, or both could have a negative impact on the number of workshops requested. However, the number of faculty professors increased throughout the period, from sixty-three in 2009 to seventy-three in 2012, as is shown in Figure 2.

...neither the number of professors nor student enrollment were considered by the librarians to be reasons for the decline in the number of library workshops. Because a variety of professors across Management disciplines requested workshops, the decline reflects a more general trend rather than the actions of a few individuals.

Likewise, the number of full-time students enrolled in the Faculty of Management fluctuated from 2009 to 2012 but overall, in the years that instruction statistics declined the most (2010 to 2013), enrollment in the Faculty of Management was relatively stable, as shown in Figure 3.¹⁶ Therefore, neither the number of professors nor

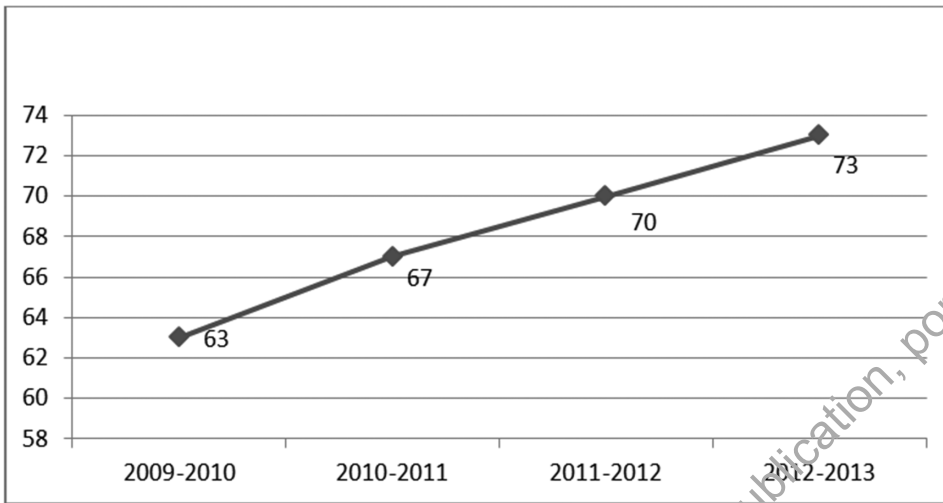


Figure 2. Number of Faculty of Management professors, 2009 to 2012

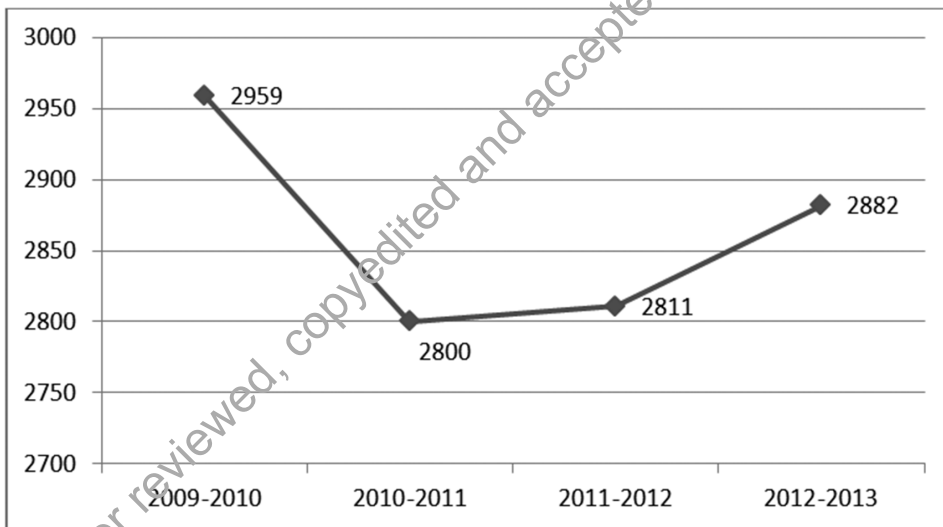


Figure 3. Enrollment in the Faculty of Management, 2009 to 2012

student enrollment were considered by the librarians to be reasons for the decline in the number of library workshops. Because a variety of professors across Management disciplines requested workshops, the decline reflects a more general trend rather than the actions of a few individuals.

Effects on Service Perception

To determine the effects of the library closure on students' and faculty members' perceptions of library service, we compared LibQUAL+® results from 2010 with results from

2012. Both the 2010 and 2012 LibQUAL+® surveys were run in the early spring of their respective years. The 2010 data represented “before” data, since the Management Library did not close until January 2011. Similarly, because the transition had been completed in 2011 (that is to say, the library space had been closed, the books had been moved to the Humanities Library, and the staff integrated into the Humanities staff), the 2012 results reflected “after” data for the closure.

To have an adequate number of responses to run a two-tailed t-test, a method of assessing the statistical significance of data, we focused on the change to the mean responses of the LibQUAL+® dimensions rather than the change in responses to individual questions. This focus provided for a total of eighty-five responses in 2012 and seventy-seven responses in 2010 (representing an approximate response rate of 3 percent for students and 6 percent for professors and lecturers in the Faculty of Management). The LibQUAL+® dimensions combine responses from sets of questions under three themes: affect of service, information control, and library as a place. LibQUAL+® uses a scale of one to nine and asks respondents to rank on that scale what their minimum level, desired level, and perceived levels are for that category (for example, “When it comes to giving users individual attention: My minimum level is . . .”). A rating of one represents the lowest ranking a respondent can give to that category, and nine is the highest. The adequacy gap represents the difference between a respondent’s minimum level and his or her perceived level for any particular question. Data were gathered from respondents who had selected Management as their primary faculty. See Table 4 for the demographic characteristics of the respondents.

Table 4.
Demographic breakdown of Management LibQUAL + ®
respondents in 2010 and 2012

User group	Number of respondents 2010	Number of respondents 2012
Undergraduate	47	50
Graduate	23	26
Faculty and lecturers	7	8
Staff	0	1
Total	77	85

LibQUAL+® Dimension Analysis

To determine if there was a difference between 2010 and 2012, we used a two-tailed t-test and looked for *p*-values <0.05. In statistics, a *p*-value represents the probability that the results of a study are caused by chance alone. The smaller the *p*-value, the more strongly

the study rejects the hypothesis being evaluated. See Table 5 for selected results. See Appendix A and Appendix B for full statistical analysis. The survey results are broken down into three dimensions:

- **Affect of service:** these questions ask about the respondents' opinions on the levels of service provided by librarians and library staff.
- **Information control:** these questions refer to whether library users can locate materials within the library in an autonomous fashion.
- **Library as a place:** these questions ask about the respondents' opinions on the spaces within the library, such as quiet study and group study areas.

Table 5.
Selected LibQUAL +[®] Results

Dimension	Year	N	Mean	Significance (two-tailed)
Affect of service adequacy gap	2012	81	0.75	0.054
	2010	77	1.21	
Information control adequacy gap	2012	84	0.32	0.078
	2010	77	0.69	
Library as place adequacy gap	2012	81	0.12	0.745
	2010	73	0.23	

1. Affect of service: this category has nine questions. It asks about service-related subjects, such as whether respondents felt that employees dealt with them in a caring fashion and were courteous and willing to help, and also rates the overall service quality (see Appendix C for questionnaire). The t-test did not produce any statistically significant results for this category. It should be noted, however, that the adequacy gap in this category (the difference between the minimum level the respondents would like to see at the library and the perceived level of service) showed a 0.054 significance. Although not considered statistically significant, it demonstrates an area for future inquiry and study.

2. Information control: this category has eight questions through which respondents are asked to rate the library's electronic resources, print materials, and journal collections required for their work as well as the "equipment" required to access the materials (for example, computers). Respondents are also asked to evaluate the library's Web site. Overall, the adequacy gap once again decreased slightly from 2010 to 2012, but the numbers were not statistically significant according to the t-tests performed.

3. Library as a place: respondents answered five questions related to space, such as the quiet study areas and the group study areas inside the library. There was no significant change between the two years for this dimension. However, the minimum level expected

for this dimension increased between the two years, with a p -value of 0.056. While not statistically significant, this increase also demonstrates a potential area for further study.

Our hypothesis that there would be a negative impact on service quality was not supported.

Our hypothesis that there would be a negative impact on service quality was not supported. There were no statistically significant negative effects on any of the LibQUAL+® dimensions between 2010 and 2012.

Qualitative LibQUAL+® Data

In addition to the statistical data, LibQUAL+® contains a section for respondents to write comments. In 2012 LibQUAL+®, there were eight comments relating to the closure of the Management Library (out of a total of eighty-five respondents). For example:

(Student) "I feel like it is an issue that there are [sic] no more library in the faculty of management. It used to be very helpful to have all of the information related to management courses in one place, in the same place as where the classes are held."

(Student) "Would like more help in Management building."

(Faculty member) "It is very unfortunate that the Management Library was closed. We are now the only faculty with no library. What message does this send to our students?"

(Faculty member) "The move from the Bronfman [Management] Building is a serious barrier to the use of library, especially in the winter."

(Faculty member) "My only complaints are: 1. Closure of the Howard Ross [Management] library in the Bronfman building."

Of the eight comments relating to the library's closure, four came from faculty members (out of a total of eight faculty members who took the survey). The overall number is too small for any definite conclusions. It is possible that the faculty who chose to respond to the LibQUAL+® survey were the respondents who use library resources more heavily and would therefore feel more strongly about the library closing. In addition to "complaints" about the closure of the Management Library, there were several comments on the newly renovated space, which was puzzling since it is no longer a library.

(Student) "I find that the McLennan [Humanities] library is really outdated and old looking. Not very comfortable to be in. However, I love the Bronfman [Management building] workspace."

(Student) "We need more quiet study spaces in Bronfman [Management building], the second floor [the former library space] has become a chilling spot."

Discussion and Limitations [A head]

There are several limitations that need to be considered when reviewing the three metrics (circulation, instruction, and service perception) that were used to determine the effects of closing a branch library.

Circulation

The Humanities Library has longer opening hours than the former Management Library (approximately twenty-five hours more per week). It is possible that the longer opening

hours at the Humanities Library mitigated the potential negative effects of the Management Library closure on the circulation of books. In addition, circulation statistics exclude in-house use, for example photocopying and scanning. Circulation is considered for the purpose of this paper to be an indicator of library quality; however, some circulations (for example if a user checks out the wrong book or one that is not useful) clearly do not reflect the level of value.

Instruction

The effects of the branch closing cannot be isolated from other factors that may have contributed to the decline in instruction. For example, McGill University Library went from three Management librarians in 2010–2011 to two in 2011–2012 and one in 2012–2013. The decrease in the number of librarians responsible for the subject limited the ability to provide the same instruction as previously.

Detailed, comprehensive data related to library instruction (that is, a listing of every course and every instructor for each year for the in-class library workshops) were not maintained. As a result, detailed analysis was not possible.

Service Perception

Although we received approximately eighty responses from Management students and faculty during both the 2010 and 2012 LibQUAL+®, this number of responses is still a relatively small sample, given that the Faculty of Management is made up of more than seventy members and 2,800 students.

The statistics contained within this article are only some facets to consider when closing a branch library. For example, this article does not discuss the effects of the closure on staff and their overall workplace satisfaction before and after the event. These effects are hinted at but not studied in several articles on branch closures. Zhou and Hall note that after a consolidation was completed, "Librarians' feelings toward the centralization remain diverse."¹⁷ Likewise, Griffin writes, "The psychological effects of a library closing can be very real for the librarian."¹⁸

In addition to the limitations described, there are factors that cannot be measured but that may have mitigated the potential for even greater effects from the closure. One of these is the consultation process that was undertaken prior to the closure. Librarians and library administrators met with key faculty and student leaders, and acted on many of their suggestions for easing the transition. For example, a delivery system for library materials was developed for faculty. It should also be noted that, while the Management Library was heavily used (240,000 visits per year), the students and faculty understood that, from an economic perspective, maintaining the relatively low-use collection in the space did not make sense. Library users also agreed that contacting the librarians by e-mail and during office hours was a workable solution. In addition, there was and con-

Circulation is considered for the purpose of this paper to be an indicator of library quality; however, some circulations (for example if a user checks out the wrong book or one that is not useful) clearly do not reflect the level of value.

tinues to be an extremely close relationship between the Faculty of Management and the staff of the Management Library. During and after the closure, the Management librarians made significant efforts to maintain connections. For example, the former head librarian of the Management Library remained active on the Faculty Council. Also, a librarian

To most students, the former library space maintained many of its previous core features, including group study rooms, computers, and quiet study space. In fact, some students still referred to the former library space as the “library” for many months after the new space had opened.

office was set up in the former library space with office hours four days per week for one hour per day during the regular school term (September to April).

Another aspect to consider is what became of the former Management Library space. To most students, the former library space maintained many of its previous core features, including group study rooms, computers, and quiet study space. In fact, some students still referred to the former library space as the “library” for many months after the new space had opened. Since the librarian office is also in that new space, many of the elements of a library are still present. The only noticeable difference is that there are no physical materials, such as books or journals.

Had the new space been converted into classrooms or faculty offices, students would have felt the closure of the Management Library even more acutely.

Additionally, to ease the transition of moving the books and journals to the Humanities Library, an automated book-dispensing kiosk was installed in the basement of the Faculty of Management. The machine offered the most highly circulating items from the previous Management Library: course textbooks and DVDs. Although the installation of the kiosk eased initial concerns from the Faculty of Management about students having ready access to their course materials, the machine has had too much downtime from technical issues to be effective.

Conclusion

The decision to close the Management Library was based on principles discussed in the literature: budgets, lack of space, proximity to the central branch, and increasing use of online resources. We hypothesized that there would be effects on the circulation of

After evaluating the data, we can conclude that there have been effects on instruction, but there was no effect on service perception or circulation.

print materials, in-class library instruction, and service perceptions. After evaluating the data, we can conclude that there have been effects on instruction, but there was no effect on service perception or circulation. However, it is important to account for the limitations of the data.

Moving forward, the librarians will continue to search for innovative ways to support faculty and students. For example, integrated

into the library's Web site is a recently enabled, searchable set of frequently asked questions (FAQ) pertaining to popular business-related topics with ready reference answers. Additionally, the librarians are looking at ways to augment in-class instruction with targeted supplementary instructional video content. Going forward, the embedded model will serve as the primary method for future interactions with students and faculty, with the desire that the Management librarian become even more integrated into courses and faculty research than previously. This integration is more possible than before the closure, when more of the librarian's time was taken up by staffing the reference desk and the day-to-day operations of a branch library.

It should also be noted that a number of variables unique to McGill University Library played potentially significant roles in mitigating effects from the closure: proximity to the central library, the interdisciplinary nature of Management, the nature of the new space that replaced the library, and the individual personalities of the Management librarians and their efforts to maintain close connections and communication with the Faculty of Management. Shutting down a branch library is a significant decision, and there are many facets to consider when closing a branch and when evaluating the impact of such a closure on faculty and students.

Acknowledgement

We would like to gratefully acknowledge Susan Czarnocki for her assistance with LibQUAL+® data.

Jessica Lange is liaison librarian for the Humanities and Social Sciences Library at McGill University Library in Montreal, QC, Canada; she may be reached by e-mail at: jessica.lange@mcgill.ca.

Amber Lannon is head librarian of the Humanities and Social Sciences Library at McGill University Library in Montreal; she may be contacted at amber.lannon@mcgill.ca.

Dawn McKinnon is electronic resources librarian at McGill University Library in Montreal; she may be reached at: dawn.mckinnon@mcgill.ca.

Appendix A

Detailed LibQUAL+® Data

Dimension	Year	N	Mean	Standard deviation	Standard error mean
Affect of service minimum	2012	81	6.36	1.759	0.195
	2010	77	5.97	1.513	0.172
Affect of service perceived	2012	81	7.11	1.507	0.0167
	2010	77	7.18	1.204	0.0137
Affect of service adequacy gap	2012	81	0.75	1.510	0.0168
	2010	77	1.21	1.497	0.0171
Information control minimum	2012	84	6.70	1.513	0.165
	2010	77	6.41	1.223	0.139
Information control perceived	2012	84	7.02	1.208	0.132
	2010	77	7.10	1.058	0.121
Information control adequacy gap	2012	84	0.32	1.234	0.134
	2010	77	0.69	1.405	0.160
Library as a place minimum	2012	81	6.44	1.683	0.187
	2010	73	5.95	1.471	0.172
Library as a place perceived	2012	81	6.56	1.630	0.181
	2010	73	6.18	1.515	0.177
Library as a place adequacy gap	2012	81	0.12	2.229	0.248
	2010	73	0.23	2.165	0.253



Appendix B

Results of the T-Tests Performed on the LibQUAL+® Data Used In Our Study

	Results of t-test			
		Significance (two-tailed)	Mean difference	Standard error difference
Affect of service	Minimum level wanted (MN)	0.136	0.392	0.262
	Perceived level received	0.738	-0.73	0.218
	Adequacy gap (AD, the difference between PR & MN)	0.054	-0.465	0.239
Information control	Minimum level wanted (MN)	0.186	0.290	0.218
	Perceived level received	0.658	-0.08	0.18
	Adequacy gap (AD, 0.078 the difference between PR & MN)	0.037	0.21	
Library as a place	Minimum level wanted (MN)	0.056	0.493	0.256
	Perceived level received	0.140	0.377	0.254
	Adequacy gap (AD, the difference between PR & MN)	0.745	-0.116	-0.355



Appendix C

Detailed LibQUAL+® Data

Dimension	Year	N	Mean	Standard deviation	Standard error mean
Affect of service minimum	2012	81	6.36	1.759	0.195
	2010	77	5.97	1.513	0.172
Affect of service perceived	2012	81	7.11	1.507	0.0167
	2010	77	7.18	1.204	0.0137
Affect of service adequacy gap	2012	81	0.75	1.510	0.0168
	2010	77	1.21	1.497	0.0171
Information control minimum	2012	84	6.70	1.513	0.165
	2010	77	6.41	1.223	0.139
Information control perceived	2012	84	7.02	1.208	0.132
	2010	77	7.10	1.058	0.121
Information control adequacy gap	2012	84	0.32	1.234	0.134
	2010	77	0.69	1.405	0.160
Library as a place minimum	2012	81	6.44	1.683	0.187
	2010	73	5.95	1.471	0.172
Library as a place perceived	2012	81	6.56	1.630	0.181
	2010	73	6.18	1.515	0.177
Library as a place adequacy gap	2012	81	0.12	2.229	0.248
	2010	73	0.23	2.165	0.253



Notes

1. Karen Croneis and Bradley H. Short, *Branch Libraries and Discrete Collections: A SPEC Kit*, SPEC [Systems and Procedures Exchange Center] Kit 255 (Washington, DC: Association of Research Libraries [ARL], Office of Leadership and Management Services, 1999).
2. Steve Hiller, "Measure by Measure: Assessing the Viability of the Physical Library," *Bottom Line* 17, 4 (2004): 129.
3. Laurie M. Bridges, "Who Is Not Using the Library? A Comparison of Undergraduate Academic Disciplines and Library Use," *portal: Libraries and the Academy* 8, 2 (2008): 187–96.
4. Brian Winterman and J. B. Hill, "Continued Viability: A Review of the Life Sciences Library at Indiana University in a Time of Institutional Change and Proposed Branch Library Downsizing," *Science & Technology Libraries* 29, 3 (2010): 203; Barton Lessin, "Merging Science/Technology Libraries," *Science & Technology Libraries* 21, 1–2 (2001): 7.
5. Karen Antell and Debra Engel, "Conduciveness to Scholarship: The Essence of Academic Library as Place," *College & Research Libraries* 67, 6 (2006): 548.
6. Jeffrey T. Gayton, "Academic Libraries: 'Social' or 'Communal'? The Nature and Future of Academic Libraries," *Journal of Academic Librarianship* 34, 1 (2008): 62.
7. Croneis and Short, *Branch Libraries and Discrete Collections*, 18.
8. William W. Armstrong, "The Closing of the LSU Chemistry Library," *Issues in Science and Technology Librarianship*, 44 (Fall 2005), doi:10.5062/F4W093V1; Leslie Czechowski, Renae Barger, Malgorzata Fort, and Gretchen Maxeiner, "Letting Go: Closing a Branch Library of the Health Sciences Library System, University of Pittsburgh," *Library Resources & Technical Services* 54, 3 (2010): 153–63; Jeanne R. Davidson, "The End of an Era," *Science & Technology Libraries* 12, 3 (1992): 35–41; Mary Hitchcock, Rhonda Sager, and Julie Schneider, "And Then There Was One: Moving and Merging Three Health Science Library Collections," *Issues in Science & Technology Librarianship*, 44 (Fall 2005), doi:10.5062/F44J0C29.
9. Mary Ann Griffin, "When a Library Closes," *Journal of Academic Librarianship* 10, 3 (1984): 141–45.
10. Linda Weber and Ruth Britton, "Academic Library Information Centers," *Behavioral & Social Sciences Librarian* 19, 1 (2000): 53–60.
11. Jian-Zhong Zhou and Leilani Hall, "Taming the Two Cultures: Integrating the Science Divisional Library into the Main Library," *Science & Technology Libraries* 24, 3–4 (2004): 219–38.
12. Veronica Calderhead, "A User-Based Perspective of an Academic Chemistry Library Relocation: People First," *Science & Technology Libraries* 16, 1 (1997): 51–60.
13. ARL, "LibQUAL+ General Information," accessed March 10, 2013, http://www.libqual.org/about/about_lq/general_info.
14. William H. Walters, "Expertise and Evidence in the Assessment of Library Service Quality," *Performance Measurement and Metrics* 4, 3 (2003): 99.
15. J. B. Hill, Cherie Madarash-Hill, and Nancy Hayes, "Remote Storage of Serials: Its Impact on Use," *Serials Librarian* 39, 1 (2000): 29–39.
16. McGill University, "Enrolment Reports," accessed January 12, 2014, <http://www.mcgill.ca/es/registration-statistics>.
17. Zhou and Hall, "Taming the Two Cultures," 236.
18. Griffin, "When a Library Closes," 144.

This mss. is peer reviewed, copyedited and accepted for publication, portal 14.4.