AN ABSTRACT OF THE DISSERTATION FOR THE

DEGREE DOCTOR OF PHILOSOPHY IN THE SCHOOL

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Title: Non-user Perceptions of Community College Library Service Quality

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The goal of this quantitative research project is to explore perceptions of community college library services among those who never or rarely use them ('non-users'). The purpose is to fill a gap in the Library and Information Science (LIS) literature related to non-users and use this new understanding to illuminate the broad base of support libraries enjoy among all those who positively perceive the library, whether they use it or not. A fuller understanding of non-user perceptions could allow library leaders to better demonstrate the value they bring to their campuses beyond mere usage through functions such as recruiting students and faculty, signaling quality, and promoting a culture of scholarship. This may allow them to garner additional resources or avoid resource cuts and thus more effectively achieve their missions.

The theoretical base in this study is drawn from Signaling Theory and Stakeholder Theory. The current project analyzes 1,200 respondents collected using the Association of Research Libraries' (ARL) LibQUAL+ survey instrument at a large, Midwestern

community college in the Spring of 2016 using a 3 x 5 mixed-design ANOVA. Non-users are defined as those who report never making use of the library premises. Their perceptions of service quality along three dimensions were compared with four other respondent groups, those who report using the library daily, weekly, quarterly, and never.

Results indicate non-users' perceptions of library services are largely positive and similar to more frequent user groups. Just 2% of the differences in perceptions of service quality are explained by usage level. Pairwise comparisons indicate no significant difference in perceptions between non-users and quarterly users, and found small effect size differences between non-users and daily users, non-users and weekly users, and non-users and monthly users. These findings suggest that non-use of the library does not necessarily indicate low perceptions of its quality. Library leaders looking to improve usage should focus instead on curriculum integration, faculty outreach, or stronger marketing. Having services that are perceived to be of high-quality is not enough to drive traffic to community college libraries. Excellent marketing, outreach, and a broader understanding of stakeholders is also vital.

Keywords: non-users, community college libraries, perceptions of service quality, LibQUAL+

NON-USER PERCEPTIONS OF COMMUNITY COLLEGE LIBRARY SERVICE QUALITY

By

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Chapter 1: Introduction

The purpose of this research project is to describe perceptions of academic libraries among those who never or rarely use library services (‘non-users’). The goal is to use this new understanding to empower library leaders to broaden their base of support to include all those who positively perceive the library, whether they use it or not.

Background: User Focus in LIS

For the last several decades (Dalrymple, 2001; White & Stone, 2010), the academic discipline of Library and Information Science (LIS) and practicing information professionals have emphasized users and usage. Ranganathan (1931) proposed the now famous “Five Laws of Library Science,” a direct reference to physical laws from the hard sciences, most notably including Newton’s Laws of Motion. Ranganathan’s very first law emphasizes usage: “Books are for use.” However, despite Ranganathan's first law, the field of LIS remained largely focused on systems and collections until the late 1970’s when scholars such as Dervin and Zweizig explicitly championed a new paradigm for LIS which placed users at the heart of the field (Dalrymple, 2001). Rather than study libraries, collections, or library systems, these scholars argued that both librarians and LIS scholars should instead focus their attention on their users and uses or risk irrelevance (Dervin, 1977; Zweizig, 1976; Zweizig, 1977; Zweizig & Dervin, 1977). Dervin and Nilan (1986) noted that this trend had solidified into a recognizable body of literature and summarized it in *Annual Review of Information Science and Technology*.

This user-focused paradigm has remained dominant in LIS for the last four decades (Dalrymple, 2001).

Gap in Literature Non-User Studies in LIS Literature

This emphasis on users and usage has created a notable gap in non-user studies in the LIS literature. Because the field emphasized users and usage, few scholars adopted non-users as a research topic. This gap has been in place for decades and while there have been a few studies on non-users, the lack of literature and need for further studies on non-users has been a persistent consensus. Klintoe (1977) issued the first call for user research in the late 1970's. Slater (1981) identified non-users as a "neglected resource." However, the gap persisted through the late 1990's. In a theoretical exploration of non-users, Sridhar (1994) laments that "user research has totally ignored the study of non-users" (p. 2) and, writing on non-users that same year, McCarthy (1994) makes an identical observation. In a study of non-users published one year later, Flowers (1995) points out that "the professional literature does not acknowledge the problem of non-users . . . probably because there is only a small body of research that specifically addresses this issue" (p. 67). Brick (1999) claimed that "so called user research has, on the whole, ignored the non-user" (p. 196). Toner (2008) lamented "non-user surveys in academic libraries proved to be scarce" (p.20) Consonni (2010) argued that "a specific bibliography on non-users . . . does not seem to exist so far; the topic is mentioned in a few researches [sic] as a challenge, but never seriously tackled" (p. 326) or Sbaffi and Rowley (2014) published a study noting that previous non-user studies were limited because "library non-users are often hard to identify" (p. 104). The profession's turn toward users and usage historically has had the unintentional consequence of turning scholars and

practitioners away from a deeper understanding of non-users. Although the discipline has progressed our knowledge with user-studies, usability testing, and usage statistics, the perceptions, behaviors, and characteristics of library non-users remained under-studied (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994).

Methodological and Paradigmatic Challenges in Studying Non-Users

In addition to the paradigmatic focus described above, non-user studies were also blocked by the difficulty of identifying non-users who are, by definition, disengaged with library services (Katsirikou & Matalliotakis, 2010). The few studies of non-users that do exist often use one of three approaches (a) treat them as 'potential users' (b) discuss non-use of libraries as a negative personal characteristic (c) overlook them and discard their data. This is the case with the standardized reports of the LibQUAL+ tool itself, which present basic statistics about user groups, but do not use data for deeper analyses like those employed in this study. These studies will be presented in further detail in chapter two.

Studies that describe non-users as merely potential users, frame their studies as if non-use is a problem to be solved without adequately understanding the reason for non-use. Non-users, they assume, would of course use the library if only they were aware of what the library offered or if the library did a better job marketing its services. These types of studies use "non-users" and "potential users" synonymously (McCarthy 1994; Toner, 2008) or claim that non-use is simply a product of lack of awareness (Green, 1994; Millar, 2004). Slater (1981) and Brick (1999) avoided the methodological challenges of studying non-users directly by instead surveying library managers about

their perceptions of non-users. Both studies found a majority, 68% and 78% respectively, of library managers identified “lack of awareness” as the presumed key-driver of library non-use.

Challenging the assumption that there is an unmet need for library services among non-user populations, there is a long tradition in the academic library literature illustrating that students are able to succeed without the use of libraries. Branscomb (1940) conducted a cursory analysis of library usage and student success and concluded that “the facts seem to give the explanation and probably the primary explanation of why students use the library so little. They do not have to; they can do quite acceptable work, in some cases possibly better work, without doing so” (p. 52-53). Academic success and library usage may not be as hand and glove as many imply.

Mays (1985) conducted a similar study comparing library usage and student success forty-five years later and concluded that

> “the library collection is deemed, by many undergraduate students, to be superfluous to their educational program, and the lack of clear correlation between academic achievement and the use of the library collection would suggest that library use may be equally superfluous to the success in the academic program of those who do use the library” (p. 57).

The implication, from both Branscomb (1940) and Mays (1985), is that non-users choose not to use library services not because they are not aware of them, or because they are poorly marketed, but instead because some students do not have an information need they require the library to fulfill or believed the library could solve. Students could be successful in their academic program without using the library. White and Stone (2010)

found “no correlation between library visits and student attainment” in many departments (p. 88), but credited this finding to library renovations going on during the survey period rather than consider that the academic library was not a requirement for student success on campus. Unfortunately, some of the non-use of academic libraries is driven by a lack of need for library services, not a lack of awareness (Mays, 1985).

Another trend in non-user studies is the tendency to belittle them, demean them, or describe non-use as a negative character trait. For example, non-users are described in the literature as “neglectful” (Slater, 1981), “superficial,” “inefficient” (Brick, 1999), “dated” (Sridhar, 1994), “conservative and obsolete” (Evjen & Audunson, 2009), “distant” (Toner, 2008), and “lapsed” (Dent, & Yannotta, 2005). Madden (1979), presents the most detailed example of describing non-users’ characteristics in negative terms. Polling data was used to argue that non-users possess unattractive or retrograde beliefs such as: “I get satisfaction out of cleaning,” “television is my primary source of entertainment,” (p.79). By contrast, frequent library use was reported to be linked with attractive, cosmopolitan and, most notably, white-collar interests such as “most of my friends graduated from college,” and “I’ve brought work home” (p.80-81). Although Madden’s negative depiction of non-users is the most detailed in the literature, it is shared by many who study non-user groups.

Often, rather than explicitly criticizing non-user groups, the LIS literature builds disapproval into the premise of studies. In the academic library literature, LIS scholars have asked if non-users have worse critical thinking skills (Whitmire, 2002), lower scores on standardized tests, fewer AP credits, or come from disadvantaged backgrounds (Soria, Fransen & Nackerud, 2014), and, frequently, lower GPAs and higher dropout rates

(Mays, 1985; White & Stone, 2010). The research questions in these studies grow from the assumption that non-users face greater challenges and have worse outcomes or cognitive abilities than user groups. Some studies find a positive correlation between library use and student outcomes (Soria, Fransen, & Nackerud, 2014) and sometimes they do not (White & Stone, 2010). Yet often, framing usage questions as they do suggest these researchers are looking for a weakness or deficiency in non-users (Soria, Fransen, & Nackerud, 2014; White & Stone, 2010; Whitmire, 2002).

Commonly, the LIS literature has simply overlooked non-user groups. Most commonly, this is done both implicitly, by not adopting non-users as a topic of study or not recruiting them to participate in library research. However, a handful of scholars have explicitly ignored non-users by excluding non-user perceptions from their research. For example, Liebst and Feinmark (2016) recommend academic libraries focus their survey analysis on their core users and exclude those without the experience to provide valid perceptions. In this conception, only heavy users have the right to comment and only the opinions of heavy users have value. Even in studies explicitly targeting non-users, some non-user perceptions are thrown out as useless. For example, in a study of non-users, Consonni (2010) discards all perceptions except for those from “factual non-users,” those who have used the library in the past then decided not to use it anymore (p. 326). Often these actions are not malicious, they are done in the spirit of quality research, however, they contribute to the fields’ lack of understanding of non-users.

Positive Perceptions of Academic Libraries on Campus

Studies from both the LIS and facilities literature illustrate the strong positive perceptions of academic libraries. The Association of Higher Education Facilities Officers (2007) found that 53% of prospective students identified the library as an extremely or very important facility in their college decision process. Library facilities ranked 2nd, just behind "facilities in [their] major," on a list of most important facilities for recruitment, beating out residence halls, dining facilities, and exercise facilities (Reynolds, 2007). A similar 2011 study of students at two Malaysian universities found that the library was rated as the top "value added" university facility and was rated above laboratories, computer space, food courts, cafes and restaurants, parking and sports facilities as the most important building on campus (Lai, Siok, Yusof, & Kok, 2011). Similarly, Hanssen and Solvoll (2015) found that "student perception regarding the library significantly affects student satisfaction" (p. 14). Students' rankings of the library were among the most strongly correlated with student satisfaction overall. As in previous studies, the library outranked computer labs, study halls, and rooms for group work as the top facility on campus. Clotfelter (2001) notes that satisfaction with their student experience, along with income level, was the top factor influencing rates of alumni giving. Potential graduate students also express strong support for libraries. Chapman (1998) studied signals of graduate program quality among potential students and found that "Extensive Library Resources" was among the most important signals along with job placement, real-world opportunities, and faculty with business experience. Student selecting among graduate degrees in business look for high-quality library services as an indicator of an institution's rigor and value (Chapman, 1998). A 2013 study at Brigham

Young University (BYU) confirms this trend. When BYU's L. Tom Perry Special Collections were added to campus tours, student ratings of tours improved (Maggie, 2013). Academic studies as well as real world practice in both academic libraries and admissions departments strongly illustrate the continued and growing role of academic libraries on campus (Association of Higher Education Facilities Officers, 2007; Chapman, 1998; Clotfelter, 2001; Hanssen & Solvoll, 2015; Lai, Siok, Yusof, & Kok, 2011; Reynolds, 2007).

Low and Declining Usage of Academic Libraries

Even while academic libraries enjoy strong positive perceptions, a large body of research indicates that a plurality of students never use academic libraries and academic library usage, by a variety of measures, has declined in recent decades (Allison, 2015; Applegate, 2008; Branscomb, 1940; Consonni, 2010; Goodall & Pattern, 2011; Kyrillidou, Morris & Roebuck, 2014; Mann, 1974; Mays, 1985; Soria, Fransen, & Nackerud, 2013; Thompson, Kyrillidou & Cook, 2007; University of Toronto Libraries, 2015). The disconcerting fact that many students never use the library and that academic library usage is not necessary for success in higher education has been discovered, forgotten, and rediscovered several times over the history of LIS. Branscomb (1940) found that a significant minority of students made no-use of the campus library and were able to succeed without it. Mays (1985) found similar results forty years later using computer analysis and a more powerful dataset. By comparing GPAs and dropout rates among frequent and infrequent users, Mays discovered, "the library collection is deemed, by many undergraduate students, to be superfluous to their educational programme; and the lack of a clear correlations between academic achievement and the use of the library

collection would suggest that library use may be equally superfluous to success in the academic program of those who do use the library" (p. 57). Library use had no impact on GPA or dropout rates. Most recently Consonni (2010) studied perceptions of digital library services among non-users using an emailed questionnaire distributed to 359 non-users of the libraries at Universita degli studi di Milano, one of the biggest universities in Italy. Consonni (2010) describes the results as "unexpected" and "paradoxical." Non-users who responded to the questionnaire were both satisfied with the library and professed to know a great deal about it. They choose not to use it, in Consonni's (2010) opinion, "mainly because they simply does [sic] not need it" (p. 329). This finding suggests that additional curriculum integration of library services or the expended use of imposed queries (Gross, 1995) may lead to expanded use.

And, unfortunately, the situation may be getting worse. Studies indicate that the number of students who never set foot in their academic libraries has doubled in the last five decades and now stands at a little more than half. Mann (1974) studied usage in 1961 found that 23% of undergraduates did not check out a single book during their years in college. A follow-up study in 2010 found that about half of all students never check out a library book, 40% never used online library resource, and 40% failed to visit the library even once (Goodall & Pattern, 2011).

Similar studies have found equally striking results including as a 52.21% decline in usage at one institution over ten years (University of Toronto Libraries, 2015), a 46% usage rate for all undergraduates (Allison, 2015), or that just 29.9% of freshman use the library during the school year (Soria, Fransen, & Nackerud, 2013). These results from individual intuitions are bolstered by large multi-campus surveys from the Association of

Research Libraries (ARL) and National Center for Education Statistics (NCES) which report that many traditional measures of library usage, including book checkouts and reference transactions, have declined over the last two decades (Applegate, 2008; Kyrillidou, Morris & Roebuck, 2014; Thompson, Kyrillidou & Cook, 2007). Cumulatively, these results suggest that a majority of students never use the academic library during their time on campus and that traditional measures of usage may be declining at many community college libraries.

Revealed Preference Theory

Typically, what people like and what people use are linked. If individuals dislike something, then they do not use it, and if they are using something, it is because they like it. The theoretical name for this mundane observation is "revealed preference." Conceptualized by American economist Paul Samuelson in 1948 as a theory of consumer behavior, Revealed Preference theory argues that individuals' tastes can be inferred from their choices. If individuals like apples better than oranges, then they will opt for apples when both are available. Those trying to understand consumers' preferences need not ask them what they like, but simply observe what they choose. Indeed, the strong form of Revealed Preference theory argues that an individual's choices are more indicative of their preferences than what they say they like (Richter, 1966). For example, smokers may say that they wish to quit, but Revealed Preference theory argues that they actually prefer to continue smoking.

Revealed Preference theory is a powerful tool for understanding people's choice of apples and oranges, but it is importantly limited in its ability to explain positive perceptions of and use of academic libraries. Revealed Preference can explain library

users who express strong support for the library and non-users who dislike the library, but it does not explain non-users who report satisfaction with library services. Further, there is reason to suspect the overwhelming majority of non-users have strong positive perceptions of libraries and that their numbers are high and growing. As we have seen, a plurality of students has opted out of library usage (Branscomb, 1940; Mays, 1985; White & Stone, 2010), and there is evidence that academic library usage has further declined in the last two decades (Applegate, 2008; University of Toronto Libraries, 2015). Simultaneously, perceptions of libraries have been high for decades and remain high for both user and non-user groups (Consonni, 2010; Dent, & Yannotta, 2005; McNicol, 2004). Incoming students report that libraries are among the most important facilities in determining their college choice (Reynolds, 2007). These trends suggest that, at least, some non-users are strong supporters of the library. This study attempts to describe perceptions of service quality among non-user groups using the rigorous LibQUAL+ instrument.

Problem Statement

Filling a Gap in the Literature:

As shown here, the LIS literature has a notable gap in understanding non-users. The first and most direct purpose for this study is to begin to fill this gap by focusing exclusively on the non-users and their perceptions of service quality using LibQUAL+, a rigorous, highly-regarded instrument.

Broadening Libraries' Base of Support

As described above, many studies suggest that academic library usage is low, declining, and unnecessary for success in higher education. Simultaneously, academic

libraries enjoy high approval ratings and a large and growing role in student recruitment, which Consonni (2001) describes as “paradoxical” (p. 329). However, the user-focused trend in LIS has largely overlooked these non-users and practicing librarians continue to rely exclusively on measures of usage to justify their operations. If non-users are a strong base of support for libraries, then LIS researchers and practicing librarians looking at service measures may be ignoring an important stakeholder group and base of support. Yes, libraries are for use, but they may also be for more.

Multiple studies have found that academic library usage is bimodal. A plurality of students use academic libraries infrequently or not at all, there are only a few moderate users, and a significant minority of students use their academic library very frequently (White & Stone, 2010; Soria, Fransen, & Nackerud, 2014). Rather than users falling into a gradual spectrum of usage from high to moderate to low, users and non-users are, largely, two distinct groups. Part of the reason for the literature gap may be that librarians and LIS researchers interact most frequently with this high-usage group and are themselves frequent users of the library. However, as Sridhar (1994) pointed out in a foundational study of non-user groups, using the library is a “minority event” (p. 2): most people do not frequently use libraries. One aim of this study is to empower library leaders to engage with this large group of potential supporters to garner more resources and reputational support for their work. If, for example, library leaders can engage more alumni donors or prospective students or faculty, this could improve the financial and reputational health of their libraries and their institutions and may garner them additional resources and support they can then engage to more effectively carry out their library’s mission.

Purpose and Need and Applications for this Study

The purpose of this study is to better understand non-users' perceptions of community college libraries and explore how they differ from more frequent daily, weekly, monthly, and quarterly users. It does so using data gathered using the rigorous and widely-used LibQUAL+ survey instrument. One key goal of this study is to fill a notable gap in the LIS literature related to non-user perceptions of libraries, especially community college libraries. Numerous authors have noted that non-users are under-studied in the LIS literature (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994). Similarly, Community College Libraries have been described by scholars as "invisible" in the LIS literature and many have remarked on the need for additional scholarship in this area (Zeit, 2014; Hill, Best, & Dalessio, 2012; Fry, 2009; Groce, 2008; Reed 2015; Leeder, 2013). The present study, which explores both community college libraries and non-users, helps to fill this research gap.

A second purpose of the study is to influence and empower library leaders in community colleges and other institutions of higher education. There are two ways this research could impact practice. A first impact is by expanding the conversation about how academic library success is measured to include not only usage levels and the opinions of user groups but also the perceptions of other stakeholder groups, including alumni, potential students, donors, administrators, and faculty leaders, who may make less frequent use of the library but still hope for its success. Drawing on this broader base of success measures may empower library leaders to garner more support for libraries from administrators and better demonstrate their library's value on campus if traditional

measures of usage change or decline. This may allow them to secure additional resources or merely avoid resource reductions and therefore more effectively achieve their missions.

A second potential impact of this study on practicing librarianship is as an illustration of the insights that can be drawn from the better and more extensive use of data by practicing librarians, including the robust data sets gathered from LibQUAL+ survey administrations. Many published studies use only the cursory report provided by the ARL after investing significant financial and staff resources to administer this rigorous survey (Johnson, 2007; Furnival & Pinto, 2016; Greenwood, Watson, & Dennis, 2011; Xi, Li, Zhao., He, & Cai, 2016). The accompanying LibQUAL+ data set, which includes more than five-hundred variables, is never used. The under-use of this data presents a new opportunity for practicing librarians to ask and answer new and insightful questions about their users' perceptions of their services. A more modular LibQUAL+ instrument which allowed libraries greater opportunity to pick areas in which they have a need, may be both more useful and more used. However, the present study serves as an example for how this trove of unused data can be employed by practitioners to improve library services. These data can and should be more strategically used practicing information professionals and library leaders.

Research Questions

There are four primary research questions in this proposed study:

RQ1: What are the perceptions of library service quality, as measured using the LibQUAL+ survey tool at a large Midwestern community college, among those who never use library services (i.e. 'non-users)?

RQ2: Is there any significant difference in overall perceptions of service quality among non-users and user groups of daily, weekly, monthly and quarterly frequency?

RQ3: Is there any significant difference in perceptions of library service quality among the three LibQUAL+ dimensions of affect of service, information control, and library as place?

RQ4: Is there an interaction effect between usage level and the LibQUAL+ dimensions of library service?

Research Question 1 is answered using descriptive statistics such as means and standard deviations. Research questions 2-4 are answered using a 3x5 Mixed ANOVA.

Hypotheses

In the traditional conception of Revealed Preference, greater usage of library services should be linked with higher perceptions of library service quality. Individuals visit libraries, presumably, because they find library services, facilities, and staff to be of high quality. Conversely, those who choose not to visit the library may do so because they have no need of library services, or find their library services difficult to use and, therefore, could have a lower perception of library services. This assumption is one of the most commonly held in the non-user literature (Branscomb, 1940; Slater, 1981; McCarthy, 1994; White & Stone, 2010; Sbaffi & Rowley, 2014; Sowell & Nutefall, 2014). This study tests this assumption along the three LibQUAL+ service dimensions: (a) Information Control, (b) Library as Place, and (c) Effect of Service. Therefore, this study proposes the following hypotheses:

H1: There is no significant difference in overall perceptions of service quality between non-users and *all groups of daily, weekly, monthly and quarterly users combined together*.

H2: There is no significant difference in overall perceptions of service quality between non-users and *daily users*.

H3: There is no significant difference in overall perceptions of service quality between non-users and *weekly users*.

H4: There is no significant difference in overall perceptions of service quality between non-users and *monthly users*.

H5: There is no significant difference in overall perceptions of service quality between non-users and *quarterly users*.

H6: There is no significant difference between the 3 LibQUAL+ dimensions.

H7: There is no interaction effect between usage level and the dimensions of library service.

Conceptual Frameworks

Signaling Theory, drawn from the fields of Evolutionary Biology and Economics, can help explain some of the roles libraries may have beyond simply providing content and services. Signaling theory argues that certain attributes, for example peacocks' tails or the academic credentials of job candidates, may have value not because they are used, but instead because they act as a signal of quality to others (Connelly, Certo, Ireland, & Reutzel, 2011; Spence, 1973; Sundie et al., 2011). Similarly, alumni, faculty, donors, and prospective students may care about the quality of library services on campus even if they do not intend to make use of them. Studies exploring student rankings of campus facilities have consistently found that libraries rank at the top of the list, often higher than residence halls, dining facilities, or exercise facilities. (Hanssen & Solvoll, 2015; Lai, Siok, Yusof, & Kok, 2011; Reynolds, 2007).

Why do students care more about libraries, in which just 54% of them will study, than their dorm rooms (Reynolds, 2007)? Signaling theory may provide a clue.

Stakeholder Theory

Stakeholder theory, drawn from the Management literature, also offers a powerful theoretical lens for explaining the role of non-users in library operations and the popularity of libraries among non-users. It was proposed by Freeman and Reed (1983) who challenged the then prevailing shareholder view of corporations in favor of a broader understanding of the purpose of and parties to an organization. The traditional, shareholder view was that corporations exist only to create value for shareholders or owners and, therefore, only shareholder or owner opinions were of value in corporate decision making. By contrast, Freeman and Reed (1983) said that a variety of groups beyond shareholders were "stakeholders" in an organization and therefore must be given a consideration in the corporate decision making of successful companies. Stakeholder groups Freeman identified, beyond shareholders, included internal groups like employees and managers, but also external groups such as customers, suppliers, creditors, and even the larger society. If applied to academic libraries, Freeman's theory would identify a much broader range of stakeholders in library operations beyond end-users including, employees, potential students, alumni and donors, taxpayers, and all students, whether they use the library or not.

Defining 'non-user'

'Non-user' has been defined in a variety of ways within the research literature, but in every case a non-user is defined as an individual who does not make use of library services such as book checkouts, electronic database systems, the library premises, or reference services. One common parameter is that non-users must have access to library

services to use if they choose to (Brick, 1999). They must be "willful, voluntary non-users" (Sridhar, 1984), not individuals who do not use library services because they cannot. Some scholars have grouped non-users and infrequent users into a single group (Bick, 1999; Toner, 2008), others have limited their research to "informed non-users" who have tried library services and then chosen not to use them (Consonni, 2010), and still others have allowed individuals themselves to define themselves as non-users (Dent, & Yannotta, 2005; McNicol, 2004). The latter approach is most similar to the definition of non-users adopted for this study. The present study defines non-users as those who self-report using the physical library "never" on the LibQUAL+ usage questionnaire. Specifically, LibQUAL+ survey respondents are asked to respond to the question "How often do you use resources on library premises" with one of the following options: (a) Daily, (b) Weekly, (c) Monthly, (d) Quarterly, and (e) Never. In the present study non-users are described as those who responded "never" to both questions. Importantly, this study examines only those who report non-use of the library premises. Digital librarianship is an important and growing area within academic libraries. However, this study focuses on the perceptions of usage quality among those who make no use of the physical library.

Chapter Summary

Non-users have been largely overlooked by the LIS literature and some previous research suggests LIS's existing assumptions, that libraries are valued only for their use and that positive perceptions and usage are linked, may be mistaken. Previous research indicates that non-users make up a narrow majority of student bodies (Branscomb, 1940; Mays, 1985; White & Stone, 2010). Further, there is evidence that academic library usage

has further declined in the last two decades (Applegate, 2008; University of Toronto Libraries, 2015). However, perceptions of libraries have been high for decades and remain high for both user and non-user groups (Consonni, 2010; Dent, & Yannotta, 2005; McNicol, 2004). Multiple studies have found that students rank libraries as among the most important facilities in determining their college choice, signaling institutional quality, promoting student success, or adding value (Chapman, 1998; Lai, Siok, Yusof, & Kok, 2011; Hanssen & Solvoll, 2015; Reynolds, 2007). These trends suggest that, at least, some non-users are strong supporters of the library. This study uses LibQUAL+ data to describe perceptions of service quality among non-user groups. A stronger understanding of non-users could aide in either persuading them to try library services or a clearer picture of the benefits all stakeholders get from academic libraries, whether they use them or not.

The next chapter reviews the LIS literature related to library non-users, perceptions of library services, LibQUAL+, Signaling Theory, and Stakeholder Theory to illustrate what is already known in this area and what the present study may contribute. The following methods chapter thoroughly reviews the research setting, characteristics and vetting of the survey instrument, and statistical tests to be used for data analysis.

Chapter 2: Literature Review

This chapter reviews the Library and Information Science (LIS) literature related to the present study. It highlights several studies which illustrate that academic libraries enjoy strong positive perceptions and contrasts them with a longstanding finding in the literature that a large group of students never make use of the library during their time on campus and that usage may have further declined in recent decades. In an effort to explain these two countervailing trends this chapter reviews two theoretical frameworks drawn from administrative theory, *Signaling Theory* and *Stakeholder Theory*, which offer potential interpretations of why academic libraries enjoy strong positive perceptions among non-user groups. It then describes the current user-focused paradigm which has held sway in LIS for the past four decades and drawn scholars' and practitioners' attention to questions of users and usage. As a result of this paradigm, non-users have been, at best, ignored and, at worst, disparaged by the field. The final section of this chapter reviews the few LIS studies that have taken non-users as their subject and positions the current project within this literature.

Previous Research Examining Perceptions of Libraries on Campus

Numerous studies have illustrated that public libraries are still among our nation's most positively perceived civic institutions, even among non-users (Harris Interactive, 2011; Rosa, 2017). For example, two-thirds (65%) of Americans say that closing their local library would have a major impact on their community, but just 46% of the same group visited a library even once during the prior year (Zickuhr, Purcell, & Rainie, 2014; Horrigan, 2015). Similarly, a 2010 survey by market research firm Ipsos MORI found

that 80% of the English surveyed thought that public libraries were either “essential” or “very important” and just 3% of the public thought that libraries were either “not very important” or “not important at all.” However, only 57% of those surveyed described themselves as current library users (Ipsos MORI, 2010). Therefore, at least, some of the positive perceptions of libraries must have been drawn from the 43% of the public that never use them.

A smaller body of research suggests that academic libraries, like public libraries, enjoy strong positive perceptions among both users and non-users (Chapman, 1998; Kim, 2014;Lai, Siok, Yusof, & Kok, 2011; Reynolds, 2007; Straumsheim, 2017; Todaro & Herold, 2016). In a 2007 survey conducted by the Association of Higher Education Facilities Officers, 53% of prospective students identified the library as an extremely or very important facility in their college decision process. Library facilities ranked 2nd, just behind “facilities in [their] major,” on a list of most important facilities for recruitment, beating out residence halls, dining facilities, and exercise facilities (Reynolds, 2007).

International surveys confirm this result. A 2011 study of students at two Malaysian universities found that the library was rated as the top “value added” university facility and was rated above laboratories, computer space, food courts, cafes and restaurants, parking and sports facilities as the most important building on campus (Lai, Siok, Yusof, & Kok, 2011). A similar study published in 2015 by two researchers at the business school at the University of Nordland in Bodo, Norway found that “student perception regarding the library significantly affects student satisfaction” (p. 14). Students’ rankings of the library were among the most strongly correlated with student

satisfaction overall. As in previous studies, the library outranked computer labs, study halls, and rooms for group work as the top facility on campus (Hanssen & Solvoll, 2015).

The importance of the library in recruiting students seems to apply to graduate programs as well. Chapman (1998) found that "Extensive Library Resources for MBA Students," was among the important signals of MBA quality along with job placement, real-world opportunities, and faculty with business experience. When selecting graduate programs, business students prefer institutions with high-quality library services.

Real-world practices of both college recruitment staff and academic librarians support student survey findings and illustrate the important role of the academic library in recruiting students. Many guides to best practice for admissions officers and higher-education marketers emphasize the vital role of the library during the campus tour. Top publications read by both admissions officers and incoming freshman, including both *US News and World Report* rankings and *Inside Higher Ed,* emphasize the importance of the academic library in student recruitment efforts (Greer, 2010; Kim, 2014; Straumsheim, 2017; Todaro & Herold, 2016). Similarly, the Integrated Postsecondary Education System (IPEDS) maintained by the National Center for Education Statistics, which is the main source for data about higher education performance, includes library information as one of its thirteen data categories along with enrollments, graduation rates, admissions scores, and budget information. Institutions are asked to report whether or not they have a library, a shared library, or a network of branch libraries, the library's total budget, the total value of library collections and facilities, number of full-time library staff, whether the library is entirely electronic, the number of volumes in the collection, the total number of electronic items in the collection across a variety of sub-types, total salaries

and wages, total fringe benefits, as well as a number of other detailed library metrics (National Center for Education Statistics, 2017). With these measurements, academic libraries are sewn into the fabric of how we measure institutions of higher learning in the U.S.

This attention to the role of the library among admissions officers and higher education assessment is mirrored by growing attention to larger campus goals within academic libraries. In the past decade, academic libraries have increasingly been called to demonstrate their value by directly measuring their impact on institutional objectives outside the library's traditional role (ACRL, 2010; ALA, 2015; Marić, 2013). Rather than measure their quality by the size of collections or number of reference transactions, libraries are now being measured by their impact on campus goals such as recruitment, retention, persistence, and student success (University of Toronto Libraries, 2015). In response, the Association of College and Research Libraries (ACRL), the academic library division of the American Library Association (ALA), launched the Valuing Academic Libraries (VAL) initiative in 2010 to help libraries better demonstrate their impact on common college and university success measures (ACRL, 2010; ALA, 2015). Freeman et al. (2005) argued that the library has an important role as a "place" rather than merely a collection of information. Direct recruitment initiatives, which were previously perceived to be outside of the scope of academic libraries, are now being adopted at many institutions (Miller, 2012; Scalfani & Shedd, 2015). A 2013 survey of academic library directors found that 73% of libraries had adopted student recruitment programs. The most common recruitment tools libraries used were tours, open houses, recruitment events, and community programing (Hubbard, 2013). Sanabria (2013)

studied the retention role of libraries in the community college setting and found that adding library orientations to first-year-experience courses for community colleges encouraged both retention and GPA gains. Thus, academic studies as well as real world practice in both academic libraries and admissions departments strongly illustrate the continued and growing role of academic libraries on campus. On the whole academic libraries are well regarded in the higher education community.

Declining usage of academic libraries

These strong positive perceptions and the growing role of academic libraries on campus persists despite major usage studies which have found significant drops in traffic and large constituencies of students who never use academic library services during their time on campus. The coming obsolescence of libraries and their eventual replacement by information technology has been a longstanding theme in predictions about the future of libraries in the popular press. It has been predicted since, at least, Thompson (1983) who predicted the "end of libraries" as traditional facilities were first being disrupted by digital content in the form of CD-ROM based encyclopedias and early digital catalogs. The warnings of decline accelerated as internet usage rapidly expanded during the late 1990's and early 2000's. Carlson (2001) published an article "The Deserted Library" in *The Chronicle of Higher Education*, bringing the declinist narrative to a new, wider audience and spurring numerous responses within the scholarly and practitioner literature. Both practitioners and researchers alike took to their journals to dismiss Carson and anti-declinist arguments have since become a genre of their own (Applegate, 2008). Many authors have argued exactly the opposite of declinists and asserted that in a world

of abundant information libraries and librarians were more important than ever (Johnson, 2011; Palfrey, 2015).

However, many traditional measures of library success that only measure users and usage may have ebbed in recent years. A survey conducted in 1961 at Leeds University found that 23% of undergraduates did not check out a book from the library during their academic careers (Mann, 1974). In comparison, a 2010 study of students at Huddersfield University, conducted using actual login, visitation and checkout data, not self-reported usage, found that about 50% of all students in the four academic years from fall 2005 to Spring 2009 never checked out a library book, 40% never used the libraries online resources, and 40% never visited the library (Goodall & Pattern, 2011). Usage statistics published annually by the University of Toronto library show a 52.21% decline in collection usage over the decade between 2005 and 2015 (University of Toronto Libraries, 2015). A 2013 study conducted at the University of Minnesota found that just 29.9% of first year undergraduates used a library workstation even once during their first year and only 20.6% of freshman checked out a book (Soria, Fransen & Nackerud, 2013). A 2015 study of 14,722 graduate and undergraduate students at the University of Nebraska Lincoln (UNL) found that just 46% had used the library either by checking out a book or accessing a database from off campus (Allison, 20I5). These studies indicate most students never use the academic library during their time on campus.

Declines in reference transactions, book checkouts, and library usage overall are not limited to the handful of institutions which publish their data. Reference transactions in academic libraries peaked in 1996 before the growth of search engines and has been in decline ever since (Thompson, Kyrillidou & Cook, 2007). A 2007 study of reference

transactions using aggregate data from the National Center for Education Statistics (NCES) showed a steady 4.5% yearly decline in reference desk traffic between 1995 and 2004 (Applegate, 2008). Similarly, the annual aggregate statistics collected by the Association of Research Libraries, a group of large, research-focused libraries at major universities, confirm this finding. Reference requests and borrowing are precipitously down in nearly all member libraries since 2001 (Kyrillidou, Morris & Roebuck, 2014).

Countervailing and complicating the reporting of these recent trends is a much longer tradition in the LIS literature of predicting and reporting decline. Since, at least, mid-century library scholars have been wringing their hands about the perceived underutilization of academic libraries on campus. Branscomb (1940) insisted that "the question must be raised whether we need these large libraries" and argued, controversially, that academic libraries were not only under-used, they were largely unnecessary for success in college:

> The facts seem to give the explanation and probably the primary explanation of why students use the library so little. They do not have to; they can do quite acceptable work, in some cases possibly better work, without doing so . . . from the use made of them in undergraduate teaching the case can be made that many colleges have better libraries than they need. (Branscomb, 1940, p. 52-53)

Several other LIS scholars studying book checkouts at academic libraries reported similar findings in the decades after Branscomb. Barkley (1965) reported that 63% of students were non-borrowers over a one-month period. The following year Lane (1966) released a study showing that 72% of university freshman did not borrow a single book during the term he studied. Cammack and Mann (1967) reported that 90% of freshman

borrowed zero books over a four-month period. Lubans (1970) studied book checkouts over a single term and found that two-thirds of undergraduates reported having checked out just a few or no books at all. Musavi (1977) found that 74% of undergraduates were either non-users or low users of the library. Book checkouts are a poor indicator of library usage today, but during the 1960's and 1970's they were a primary focus of libraries and they were less frequent than many scholars anticipated.

Slater (1981) surveyed business librarians and found that 93% of respondents "had encountered non-use at some stage, past or present" and 87% were "aware that they had some kind of sub-optimal usage problem." Following Slater (1981), a handful of meditations on and lamentations about the declining use or non-use of libraries were published including Zhang (1987). Three independent articles were published on the subject in 1994 alone (Green, 1994; McCarthy, 1994; Sridhar, 1994). However, all of these articles both lacked methodological rigor, and in many cases lacked methodology altogether, and framed their studies as a search for deficiencies in the non-user population. Critiquing libraries as under-utilized or obsolete did not begin with the rise of the internet. It has been going on since at least the middle of the 20th century despite booms in enrollment (Seftor & Turner, 2002), numerous changes to curriculums and technology (Jaeger, 2014; Wu, 2013), and a gradual evolution of the mission of academic libraries (Saunders, 2015).

User focus in LIS

In the late 1970's and early 1980's the discipline of Library and Information Science (LIS) went through a significant shift in emphasis. Research in the field switched from a focus on systems and processes to a research agenda focused on the subjective

needs, psychology, and behavior of information users (Talja & Hartel, 2007). This user focus has been the dominant paradigm within LIS ever since, despite 30 years of predictions about the decline of library usage (Thompson, 1983; Bazillion, 2001) and increasing evidence that library use, within universities at least, is indeed in decline (Kyrillidou, Morris & Roebuck, 2014).

In the late 20th century, library models focused on systems and content gave way to a user-centered focus that helped ensure libraries welcome all patrons and remain dynamic through changing times (Dalrymple, 2001). Early models of library and information science, from the 1940's and earlier, focused on messages and content rather than the use of that content. Librarians were satisfied to merely make material available rather than ensuring that it was used and understood (Kuhlthau, 1991). The generation of community minded librarians and LIS researches including Dervin (1998), Greer, Grover, and Fowler (2013) and others helped librarians better serve their patrons. Kuhlthau (1991) argued that libraries were no longer merely book focused and should instead consider the user perspective.

This shift from a system focus to a user focus was accompanied by a related shift in theoretical foundations as the discipline came under attack from within the academy for its lack of a theoretical base (Budd, 2001; Zwadlo, 1997). Other social sciences, including sociology, psychology, and economics, had key theories and theorists that drove research agendas and shaped research questions. As an applied and interdisciplinary field, LIS scholars had less of a theoretical foundation to draw upon and began to worry that their practitioner focus was damaging their reputation within the university. Some in the field went searching for theories to undergird their work (Radford

& Budd, 1997). Three LIS scholars with backgrounds in academic philosophy, Budd (2001), Radford (1992) and Dick (1995), put forth anti-positivist continental philosophers as a potential theory base. Budd (2001) nominated hermeneutics and the work of German Philosopher Jürgen Habermas, Dick (1995) championed a broad coalition of anti-positivist thinkers, and Radford (1992) proposed Foucault's work as a theoretical foundation for the work of LIS scholars and researchers. In two influential articles published in 1992 and 1998, Radford used Foucault's theory to challenge the supposed neutrality and objectivity of facts and organization systems within LIS and argue that a less certain, more ambiguous approach to library organization would be preferable. In a later paper Radford and Budd even asserted that LIS researchers were "not confused enough" and therefore should adopt more qualitative, interpretivist approaches to research advocated by thinkers like Habermas and Foucault (Radford & Budd, 1997; Budd, 2001).

Central Question: Why Positive Perceptions of Libraries Despite Low and Declining Usage?

Thus, we have three conflicting findings from the literature: (a) a paradigmatic and theoretical emphasis on usage and users as the purpose and primary goal of libraries, (b) large and increasing support for academic libraries and their role on campus despite (c) declining use of academic libraries by enrolled students themselves. If libraries are for users and the number of users of academic libraries are declining, why do perceptions of libraries remain positive?

Two findings from outside of LIS can shed some light on the subject. One widely publicized study from the field of Economics found that humans can be poor predictors

of future behavior they see as virtuous (Paulhus & Vazire, 2007). DellaVigna and Malmendier (2006) studied gym membership purchases at several large commercial exercise facilities and found that purchasers tended to choose flat-fee, all-you-can-visit monthly subscription plans instead of paying per visit, despite the fact flat-fee plans cost 70% more on a per-visit basis. Users over-estimated how often they would use the gym and therefore ended up paying for memberships they did not use. Similar effects could be taking place in libraries.

Another finding from the urban planning literature found similar results for public transit support. Manville and Cummins (2015) examined support for public transit spending by looking at ballot initiatives and five large national surveys. They found that voters and respondents overwhelmingly support additional transit spending but do not themselves intend to switch from private vehicles to buses and trains. Voters want stronger transit systems for others to use. Manville and Cummins (2015) speculate this is due to the significant positive externalities of transit use: less congestion, cleaner air, and lower gas prices. Americans are aware of these externalities and therefore choose to fund transit for others but choose not to ride it themselves. Voters, like would-be gym visitors, choose to pay for services they themselves will not use.

Could a similar phenomenon be found in community college libraries? Perhaps libraries are valued not only for their use but also because they meet other, more abstract campus or societal needs.

Theoretical Frameworks: Signaling Theory and Stakeholder Theory

Two theories from administrative science, Signaling Theory and Stakeholder Theory, could help explain libraries' high levels of support but declining usage.

Signaling Theory

Signaling theory is a central theory of information economics and holds a prominent position in several management literatures including strategic management, entrepreneurship, and human resource management (Connelly, Certo, Ireland & Reutzel, 2011; Spence, 2002). Signaling theory is used to explain how firms and individuals reduce information asymmetry in the marketplace or other personal interactions. According to signaling theory, certain actions and behaviors have value not because of their intrinsic benefit, but instead for the credible information they communicate to others. The most seminal work on signaling theory was proposed in Spence's (1973) work on labor markets and the behaviors and credentials job applicants use to demonstrate their quality to employers. Spence argued that higher education credentials and other certifications had value not only because they imparted valuable skills to potential applicants that make them more effective on the job but also because of their information value. In Spence's conception, credentials and diplomas also allow job applicants to communicate that they are hardworking, intelligent, and resilient and differentiate themselves from other applicants. Notably, for Spence, the communication value of these credentials remains whether or not the applicant has actually gained skills they will use on the job in the course of getting their diploma. It is merely sufficient that the signaling credential be more difficult to obtain for applicants that do not possess desirable qualities (i.e. those who are not hardworking, intelligent or resilient) than applicants that do possess these employable qualities. For Spence, the time, expense, and hard work that graduates invest to obtain degrees has value not

because their academic skills will later be used on the job, but instead because they communicate information about their quality as a worker.

The logical lynch-pin of Spence's argument is the observation that in certain competitive environments, for example when applying for jobs, every competitor has an incentive to provide inaccurate information about their quality, especially when it is costless to do so. If employers merely asked applicants if they were hard-workers, even those who were lazy would answer in the affirmative. This causes information asymmetry because employers cannot differentiate the credible messages of hard-workers from the dubious messages of the laggards even though both the signal sender (hard workers) and receiver (the employer) are attempting to communicate. Spence's insight was that this information problem can be solved by raising the cost of sending a signal, as long as what individuals must give up to send signals, Spence calls this 'signaling cost,' is lower for those telling the truth rather than those attempting to mislead (p. 358). In Spence's example, because obtaining postsecondary credentials is easier for the intelligent and hardworking than for the dull and lazy, it is an effective means for intelligent and hardworking applicants to communicate their qualities to employers. Spence notes that not only do signals have to be costly to be effective, but also they have to be costly enough that only those with credible messages can 'afford' them. Their costs must be so high that would-be fakers will be dissuaded from paying the costs and sending a false signal.

Uses of Signaling Theory in the Management Literature

This framework won Spence (1973) along with Akerlof (1970) and Stiglitz (1976) the 2001 Nobel Memorial Prize in Economic Sciences for their work in information economics and has been used to explain a number of different phenomena in the management literature. Within the strategic management literature, Zhang and Wiersema (2009) used the theory to explain how firms signal unobservable but desirable characteristics, such as stability, integrity, and long-term viability, that do not appear on their financial statements to potential investors. Miller and Triana (2009) make similar use of the theory to explain how firms use the makeup of their boards of directors to communicate adherence to ethical standards and social values to investors, regulators, and other stakeholders. Lester, Certo, Dalton, Dalton, and Cannella (2006) explain how the selection and characteristics of management teams is used as a communication device by firms using signaling theory. Other authors have followed suit to explain how the makeup of governing boards is used to communicate their value before initial public offerings (Certo, 2003; Bruton, Chahine & Filatotchev; 2009). Goranova, Alessandri, Brandes & Dharwadkar (2007) explain how top executives use their ownership stakes within firms to communicate with disparate owners and potential owners in capital markets using signaling theory. Turban and Cable (2003) employ a signaling framework to explain how college football coaches communicate program quality to potential high-school recruits using Hummer limousines to communicate the wealth of their programs and the depth of financial resources available to teams.

Similar to Shannon's (1948) mathematical model for communication, signaling theory relies on three key concepts: (a) a signaler, (b) a recipient, and (c) a signal. All

three of these concepts have been well explored in the management literature. A number of Shannon's (1948) additional elements of a transmitter, receiver, channel, and noise source have analogs in the signaling literature. Shannon's concept of 'noise,' for example, has been reconceptualized as 'distortion' by management scholars when unintentional and as 'false signaling' when introduced by design (Branzei, Ursacki-Bryant, Vertinsky, & Zhang, 2004; Carter, 2006).

Signalers in the management literature. Most scholars in the management literature have defined signalers as individuals, products, or firms with specific, private information that would be useful to outside parties. Scholars have explored the signaling roles of a number of groups including employees, managers, recruiters, firms, and even products themselves (Ehrhart & Ziegert, 2005; Ma & Allen, 2009; Rynes, Bretz & Gerhart, 1991). A number of studies have focused on the managers as signalers. Ramaswami, Dreher, Bretz & Wiethoff (2010) examined the signaler roles of managers in their study of the factors influencing career success. Carter (2006) explored the role of managers as signalers of an organization's reputation. Boards of directors are also a common signaler in the management literature. Kang (2009) used signaling to explain its finding that innocent firms experienced reputational damage when they had a director associated with another firm that had been accused of financial reporting fraud. Miller and del Carmen Triana (2009) also explored boards of directors as signalers of unobservable firm qualities through their demographic diversity. Hochwarter, Ferris, Zinko, Arnell, and James (2007) explored the signaling roles of employees through their reputations. In the strategic management literature, Goranova, Alessandri, Brandes, and Dharwadkar (2007) explored the signaler role of

firm's investments themselves. If, as the management literature has found, other major societal institutions use policy and management decisions to send signals to outside stakeholder groups, it may be that libraries do so as well.

A number of firm-level signalers have also been explored in the management literature. Highhouse, Thornbury, and Little (2007). Ryan, Sacco, McFarland and Kriska (2000) explored how organizations act as signalers of unobservable characteristics, such as firm culture to applicants and potential employees using observable signals such as social identity and multi-hurdle application processes. Bruton, Chahine and Filatotchev (2009) explored entrepreneurs as signalers and how they use underpricing during their initial public offerings (IPOs) to signal value to outside investors. Similarly, Elitzur and Gavious (2003) explored the signaler role of entrepreneurs in attracting wealthy, venture-capitalist investors and venture capital, particularly the possibility of false signaling. Michael (2009) studied a similar firm-level signaler in a study of franchisers acting as signalers to attract resources. Zimmerman (2009), following in the footsteps of Hambrick, Cho, and Chen (1996), studied a similar group of signalers in a study exploring how firms undergoing an IPO signal value to would-be investors through the diversity of their top management teams. Writing in the strategic management literature, Basdeo, Smith, Grimm, Rindova and Derfus (2006) explored how firms act as signalers of their reputation with their market actions. Chung and Kalnins (2001) used firms as signalers in their study of the placement of hotel chains in rural markets and found clustering of establishments, rather than decreasing prices due to competition, actually improved firm profitability of small establishments due to signaling effects. Gammoh, Voss and Chakraborty (2006)

also study firm-level signalers in their work explaining how firms use brand partnerships to signal product quality, even among unrelated product categories. Libraries and library leaders may be using similar signaling strategies in their daily operations.

Recipients as defined in the management literature. The management literature has focused on recipients who are individuals or groups of individuals, rarely products or other non-human entities. Consumers, competitors, and employees are all common receivers that have been studied in the management literature. Investors or potential investors are also common signalers in the literature (Basdeo et al., 2006; Carter, 2006). Employers and employees are also common recipients in the signaling literature. Spence's (1973) original study explored employers as signalers while Ryan et al. (2000) explored the potential employees as recipients. However, investors and potential investors are by far the most common recipient group studied in the management literature. For example, Busnitz et al. (2005), Davila et al. (2003), and Michael (2009), all studied potential private and venture investors as their recipient group in their signaling studies. Many other scholars, including Benveniste and Spindt (1989) Allen and Faulhaber (1989), Gulati and Higgins (2003) and Daily, Certo and Dalton in several papers (Certo, 2003; Certo, Daily, & Dalton, 2001; Daily, Certo & Dalton, 2005) all studied public investors as recipients, often in the context of initial public offerings (IPOs) in which companies go from privately owned to publicly traded. IPOs offer a unique natural experiment because less public information is available on privately held companies to determine whether their IPO shares are correctly priced

(Allen & Faulhaber, 1989). This information asymmetry presents a unique opportunity for signaling and therefore is commonly used for signaling studies.

Both receiver attention and receiver ability are key characteristics used by management scholars to evaluate and describe signaling recipients. Scholars have found that recipients often fail to notice or incorrectly interpret even clear signals. Ilmola and Kuusi (2006) point out that weak signals in particular can be overlooked if potential recipients are not paying attention. Similarly, in their study of signaling in IPO offerings Gulati and Higgins (2005) found that young companies were only able to successfully send signals when recipients in the IPO market were looking for them. Signaling, even though it is by nature an indirect means of communication, requires intentionality both by the signaler to send the signal and the recipient to perceive and correctly interpret it. Perkins and Hendry (2005) used qualitative interviews to study how signaling recipients on corporate boards interpreted signals about compensation and found that different recipients interpreted identical signals differently based on both their individual characteristics and the circumstances of the signaling. Similarly, Srivastava (2001) tested a signaling model for negotiation in lab experiments between individuals and found wide variation in both the ability of signalers to successfully signal their position and the ability of recipients to correctly observe and interpret these signals, even in laboratory conditions and simple, contrived scenarios. Branzei et al. (2004) also found interpretive differences of identical signals among recipient firms. They report that different firms calibrate their interpretations of signal differently based on their unique interests as well as their judgements of both the signal and the signaler. In a similar study in a different context, Highouse et al. explored the signals sent to

potential employees by hiring firms and found that different potential employees, because of they were looking for different things in potential employers, both ignored and perceived different signals and interpreted those signals differently. Gulati and Higgins (2005) study of IPOs found that the timing of signals during IPOs can have a significant effect on firms' success. Cohen and Dean (2005) found that recipients who have received similar signals in the past, and therefore know what to look for, are more likely both to perceive and correctly interpret similar signals in the future. This large body of management literature suggests signaling is anything but straightforward and that recipient characteristics, experience, and acumen play an important role in successful signaling. Within the framework of this study, potential signaling recipients for libraries could include potential students, alumni, donors, faculty members and potential faculty members, accrediting agencies, education department officials, employees, and students themselves.

Signals as defined in the management literature. Management scholars have identified and studied a number of different phenomena as signals including the membership of certain key groups, facilities, advertisements, ownership, management style and legal structure. Deephouse (2000) married mass communication theory and the management literature, particularly institutional theory, to demonstrate how firms use their media reputations signals of underlying quality. Coff (2002) explored shared experience as a signal for bidders in corporate acquisitions. Certo et al. (2001) studied the makeup boards of directors as a signal of firm legitimacy and Lester, Certo, Dalton, Dalton and Cannella (2006) followed five years later with a similar study exploring how prestigious managers similarly act as a signal of underlying firm quality. Owners

are also a well-studied signal in the management literature. Firms that are owned by insiders or those with specialized knowledge about firm operations have been found to act as a signal of firm quality because these insider owners possess private information about firm quality (Sanders & Boivie, 2004). Relatedly, Busenitz et al. (2005) found that firms owned by their founders are a particularly strong signal of firm quality because owners who are also founders possess the most detailed information about firm quality and have large stakes to lose if their firm is unsound. Gulati and Higgins (2003) explored interorganizational ties as a signal and Perkins and Hendry (2005) studied managerial stability as a signal. Warner, Fairbanks, and Steensma (2006) demonstrated the signaling value of intellectual property and technology acquisitions in signaling firm health. Many of these authors draw on DiMaggio and Powell's (1995) institutional theory in their assumption that firms strive for legitimacy. Signals are a means of gaining, protecting, and communicating that legitimacy (Certo, 2003).

Management scholars have also identified several different important characteristics of signals that determines their effectiveness. Zhang and Wiersema (2009) use the concept of signal fit to describe whether or not a signal matches with the characteristic or quality it is intended to communicate. Intuitively, signals which are a better fit for their messages are more effective. Janney and Folta (2003) employ the characteristic of signal frequency and find that messages that are sent again and again are more effective than those sent only once. Gao. Darroch, Mather and MacGregor (2008) use a related concept of signal consistency to demonstrate the greater effectiveness of signals that are sent routinely from those sent unexpectedly or infrequently. Two final important characteristics are signal strength (Gulati & Higgins,

2003) and signal visibility (Warner et al, 2006). Management scholars have noted that signals that are considered strong and highly observable are more likely to be perceived, correctly interpreted and, crucially, trusted as credible. Potential signals within the framework of this study could include decisions about collection composition, facilities, available services, staffing decisions, marketing, and many other aspects of library operations.

'False' signals and the handicap principle. One notable aspect of the signaling framework is signalers incentive to send false signals to communicate qualities they may not possess. For example, Westphal and Zajac (2001) study how firms send false signals of future stock repurchases through plans and policies to drive up their share price, and then fail to follow through. Most management scholars have adopted the term 'signal honesty' to differentiate true signals from false ones (Durcikova & Gray, 2009). Honest signals are those sent by signalers that actually possess the underlying quality their signaling. Dishonest signalers are those sent by signalers who do not possess the underlying quality. Other terms have also been used in the management literature to describe this distinction. Busenitz, Fiet and Moesel (2005) use the term 'veracity.' Cohen and Dean (2005) differentiate 'suspicious' signals and 'genuine' signals. Davila, Foster, and Gupta (2003) use the term 'credibility.' All these terms describe a similar designation.

Johnstone and Grafen (1993) originally outlined this problem and their 'handicap principal' as a solution in the animal behavior literature, but the handicap literature has been widely adopted by management scholars. The handicap principle states that honest signalers can communicate their honesty through signals as long as they have lower

signaling costs than false signalers. In Johnstone and Grafen's (1993) framing, sending the signal must be a greater 'handicap' for false signalers than for true ones for signals to be effective. By voluntarily adopting significant handicaps honest signalers can communicate their ability to overcome these handicaps in a way false signalers would not. Ndofor and Levitas (2004) explored how the handicap principle increases firms' transfer cost because their need to communicate authenticity.

Thorsten Veblen's 'conspicuous consumption' and Veblen goods. Veblen's (1899) theory of conspicuous consumption shares much similarity with the handicap principle. Veblen termed this the "law of conspicuously wasteful expenditure of time and substance," and noted how the leisure class use waste to signal their wealth and extra resources. Writing decades before Spence (1973) or Johnstone and Grafen (1993), Veblen (1899) noted that being wasteful is an essential requirement of conspicuous consumption:

> "Throughout the entire evolution of conspicuous expenditure, whether of goods or of services or human life, runs the obvious implication that in order to effectually mend the consumer's good fame it must be an expenditure of superfluities. In order to be reputable it must be wasteful. No merit would accrue from the consumption of the bare necessities of life, except by comparison with the abjectly poor who fall short even of the subsistence minimum (p. 97)."

Notably, Veblen observes that the type of waste or the content of leisure is not important. It is merely important that it be expensive. In Johnstone and Grafen's (1993) conception, the truly wealthy are signaling their resources by 'handicapping'

themselves with wasteful expenses to differentiate themselves from would-be false signalers who could not afford the same amount of expense.

The management and economics fields have acknowledged the influence of Veblen (1898) on their fields through the creation of a special category of goods called Veblen Goods (Arrow, 1975). Veblen goods are defined as products for which, contrary to traditional economic models, demand increases as prices increase (Leibenstein, 1950). For traditional goods, as prices increase demand for goods decreases (Eaton & Eswaran, 2009). If gasoline becomes more expensive, the traditional thinking goes, individuals will purchase less gasoline. Veblen goods, by contrast, become more desirable as their price increases. This is also called a 'Veblen Effect.' Economists and business scholars have discovered a number of Veblen goods including luxury automobiles, watches, and whiskey (Frank, 1985; Braun & Wicklund, 1989; Bagwell & Bernheim, 1996).

Other Uses of Signaling Theory

Signaling theory has also been widely used in the sociology and biology literature to explain consumption patterns or genetic traits that seem costly and inefficient from a utilitarian perspective but actually have an important role in signaling fitness. Biologist Zahavi (1977) uses signaling theory to explain the male peacock's long, maladaptive tail. Zahavi argues that in order to be reliable signals must be inefficient and maladaptive. In environments where faking is possible, Zahavi argues, only expensive signals can be reliable. If a signal is not a handicap on fitness it will be widely copied. Conversely, only individuals with superior fitness, for example dominant male peacocks, can afford to overcome the handicap of the signal.

Signaling theory could help explain the gap between library usage and positive perceptions of libraries by adding a symbolic role to libraries in addition to their utilitarian role of providing information, study space, and research instruction. Expensive libraries signal to faculty, students, donors and alumni, including those who never use the library, that the associated institution is of high quality and has strong financial footing and longevity to sustain such a costly structure and services. Indeed, from a signaling perspective it may be that as physical libraries become costlier their signaling value increases. This may be a way forward for library leaders struggling to demonstrate their library's value despite declining usage.

Stakeholder Theory

In its simplest form, Stakeholder Theory argues that stockholders and owners are not the only group that firm leaders need to consider when making decisions about organizational management. Instead, a broad group of stakeholders, including employees, customers, suppliers and the general public, should be considered in leader's decisions. Stakeholder theory is most often credited to Freeman from the business science literature, who championed Stakeholder Theory in 1983 as an alternative to the then dominant Shareholder Theory of organizational leadership. However, business ethicists have traced concepts similar to Stakeholder Theory as articulated by Freeman (1983) back to foundational works of Adam Smith including *Theory of Moral Sentiments* (1759) and *Lectures in Jurisprudence* (1763) (Brown & Forster, 2013). Stakeholder Theory as a term was introduced by the Stanford Research Institute in 1963 to conceptualize the growing notion that managers' over-valuing of owners' was doing damage to other institutional and societal groups (Donaldson &

Preston, 1995). Freeman (1983) built on these concepts and offered them as an alternative form of strategic management better suited to the problems of rising competitiveness, globalization, and increasingly complex firm operations. Stakeholder theory has grown in importance due to growing media coverage, increasing concerns about corporate governance, and public interest (Wagner Mainardes, Alves & Raposo; 2011). Laplume, Sonpar, and Litz (2008) traced the rise of stakeholder theory from 1984 to 2007 through analysis of 174 articles about stakeholder theory published in eight leading management journals (*Academy of Management Review*, *Academy of Management Journal*, *Administrative Science Quarterly*, *Journal of Management*, *Journal of Management Studies*, *Organization Science*, *Organization Studies and Strategic Management Journal*) as well as three journals explicitly dedicated to social issues in business and business ethics (*Business & Society*, *Business Ethics Quarterly*, and *Journal of Business Ethics*). Their analysis shows that Stakeholder Theory rose to prominence in 1995 when a special issue of *Academy of Management Review* was devoted to the topic. Frooman (1999) noted that "no one can underestimate [Freeman's] effect on the management literature or undervalue its worth (p. 191)."

Stakeholder theory has been widely used within several subfields of management. Within strategic management major work by Clarkson (1995) clarified the limits of who ought to be considered a stakeholder by noting that firms that prioritize the needs of their primary stakeholders perform better than firms which prioritize the general social issues. Frooman (1999) produced another influential application within strategic management in an exploration of the strategies stakeholder groups use to influence the decisions of firm leaders. Utilizing the framework for Resource

Dependence Theory, Frooman (1999) argued that who is dependent on whom influences which of four influence strategies (direct withholding, direct usage, indirect holding, and indirect usage) stakeholder groups can use to advocate for their interests in firm decisions. Organizational theory, another sub-field of management, has also made broad use of stakeholder theory. Applying stakeholder theory to organizational theory Donaldson & Preston (1995) note that stakeholder theory is composed of three mutually supporting justifications, descriptive, instrumental, and normative. They argue that stakeholder theory not only observes that organizations have multiple stakeholders but also has managerial implications for organizational leaders looking to optimally lead their firms. Jones (1995) offered another important application of stakeholder theory to organizational theory. He explored how firms obtain stakeholder support and noted that organizational ethics, building trust, and avoiding opportunistic behavior helped firms maintain high levels of support among stakeholder groups. Rowley (1997) explored how firms manage stakeholders and found that networked relationships, rather than the simple dyadic models used previously, play a key role in maintaining stakeholder support.

A final management sub-field in which stakeholder theory has been widely used is business ethics. Several business ethicists including, Argandoña (1998) and Reed (1999), use stakeholder theory as a framework to argue for the interests of board societal groups including both those with no power to influence firm decisions and even those who are unaware of the organization or its decisions. Jeurissen & Keijzers (2004) argue that future generations are a notable stakeholder in firms' present decisions and Driscoll

and Starik (2004) argue that individuals in developing countries ought to be considered as stakeholders in local managerial decisions.

Another notable trend in the business ethics literature is to extend the definition of stakeholders to beyond individuals and human groups and therefore encourage businesses to consider a wide variety of non-human groups in their decision making. Ethicists Phillips and Reichart (2000) applied Rawls' (1985) principle of fairness to stakeholder theory to argue that even the non-human natural environment should be included as a stakeholder in firms' decision making. Starik (1995) uses stakeholder theory to argue that even trees may have managerial standing.

Stakeholder theory has been widely adapted for applications outside of traditional for-profit businesses. Bryson (2004) applies stakeholder theory to the management of non-profit organizations and argues that stakeholder analysis is an effective tool for organizational leaders looking to make decisions in pursuit of the common good. Gomes and Liddle (2010) expanded upon Bryson's application to include the cross-cultural stakeholders many nonprofit managers work with in achieving their complex, multi-purpose public interest goals.

Scholars of higher education leadership have also adopted stakeholder theory as both a descriptive and normative framework to apply to postsecondary education. Former Harvard President and influential writer on higher education Derek Bok (1985) notes the "constituency-oriented system of our system of higher education" that requires post-secondary leaders to balance the needs and influence of multiple stakeholder groups (p. 124). Jongbloed, Enders, and Salerno (2008) apply Stakeholder Theory to higher education and argue that careful "stakeholder analysis" can help

higher education organizations avoid “mission overload” as they are increasingly called to balance the needs of multiple communities including students, the research community, and growing relationships with industrial and regional partners. Chapleo and Simms (2010) conducted interviews with thought leaders at various positions at a single university to determine the universities’ perceived stakeholder groups, their membership, and their level of importance. Their note that nearly every educational leader they talked two identified a wide breadth of stakeholders, including students, funders, faculty, researchers, staff, community members, businesses, potential students, and alumni. As one interviewee noted “everybody is effectively a stakeholder of the university (p. 61).” Alves, Mainardes, and Raposo (2010) apply a stakeholder framework to higher-education marketing. They argue that higher educational institutions can best manage their organizations through relationship management via long-term engagement to promote stakeholder loyalty. Marić (2013) champions stakeholder analysis as promising entrepreneurial leadership style for leaders in higher education to adopt in response to increasing competition, accountability, and continuous improvement. Stakeholder analysis, Marić (2013) argues, allows educational leaders to systematically consider all the key players in higher education decisions, even those who are infrequently heard from or unaware. Okunoye, Frolick, and Crable (2008) use stakeholder theory as a lens to explain the decision to implement a specific software system, an enterprise resource planning system, at a Midwestern university. They note that while that individuals which control scarce university resources had the most control over the decision to implement initially, ultimately other stakeholder groups including end-users and support staff play a key role in ensuring the

new system's success. Okunoye, Frolick, and Crable (2008) note that stakeholder analysis may be even more applicable in a higher education setting than at traditional for-profit firm because of their tradition of shared governance and dependence on committees and cooperation for organizational decision making.

One particularly important stakeholder that has received a great deal of attention in the higher education literature is alumni donors. Numerous explanations of their motivations have been put forth. Four motivations for charitable giving more generally are popular in the literature. Becker (1974) argues that donors give out of concern for the wellbeing of recipients. Keating, Pitts, and Appel (1981) assert that donors are motivated by social pressure. Yoo and Harrison (1989) found that donors are motivated by recognition and flattery. Andreoni (1990) put forth that the act of giving itself brings utility that motivates donors. Finally, Sen (1978) argued that donors give out of a sense of commitment, rather than any positive feelings or utility.

Within higher education, a number of authors have noted that alumni giving depends on subjective perceptions about the institution (Clotfelter, 2003). Thus, if campus libraries influence alumni perceptions about an institution they may positively contribute to alumni's likeliness to contribute. However, fewer empirical studies have focused on motivations for charitable giving within higher education than other charitable areas. Harrison, Mitchell and Peterson (1995) found that those involved in fraternities and sororities were more likely to support their colleges and universities following graduation. Okunade and Berl (1997) found that alumni with family ties to the institutions were more generous with their alma maters. Covell (2005) used stakeholder theory as a theoretical base for studying stakeholder loyalty and alumni

giving specifically as it relates to wins and losses among Ivy League football teams. He found that alumni do not report that a team's performance influences their rate of giving and that factors like "event atmosphere" are more often cited as reasons for attending games than "to see the team win (p.173)." Clotfelter (2003) analyzed survey data from more than 10,000 alumni from three cohorts and found that two key factors most influenced rates of alumni giving: (a) income level and (b) level of satisfaction with their undergraduate experience. When combined with Hanssen and Solvoll's (2015) finding that positive perceptions of campus libraries are most strongly correlated with positive perceptions overall, this finding may indicate that academic leaders can be more effective in engaging the alumni donor stakeholder group.

Within the framework of this study, stakeholder theory could empower libraries to consider the implications of their decisions on numerous stakeholder groups, not just the narrower category of their users. If, for example, library leaders can engage more alumni donors or prospective students or faculty this could improve the financial and reputational health of their libraries and their institutions and may garner them additional resources and support they can then engage to more effectively carry out their library's mission.

Community Colleges

The data used in this study were gathered at a large, suburban community college in the American Midwest. This section summarizes the role of community colleges in American higher education and reviews the LIS literature on community college library users. Community colleges are two-year postsecondary institutions of higher education. They typically are supported through local tax dollars and educate local students to meet

local workforce and education demands. Community colleges are open access institutions, which means that there are no selective admissions criteria. (Cohen, Brawer, & Kisker, 2013). They are among the largest educators of undergraduates in the US. They enroll approximately 45% of all undergraduates taking classes for credit and attendance at community colleges has increased moderately in the last decade (Ma & Baum, 2016). In 2000 community colleges educated 5.5 million students and 7.4 million students attended community colleges in 2015, a gain of 34.5% over fifteen years (Dunn & Kalleberg, 2017). However, in aggregate, community college students have lower on-time graduation rates than students enrolled at four year institutions. Twenty percent of students enrolled full time at a public community college in 2009 earned an associate's degree or certificate within three years. By contrast 57% of undergraduates enrolled full time at a four-year institution earned a bachelor's degree within six years (Kena et al, 2016). Average tuition at community colleges is significantly lower at community colleges than at public four-year colleges. Average community college tuition is $3,500 per year. Typical in-state tuition at four-year schools is $9,139 (College Board, 2013). However, according to Shaffer, Sohl and Steele (2016) tuition only accounts for 20% of a community college student's total cost of attendance. Community colleges also receive lower levels of government support. Public research universities receive, on average, $16,000 in per-student funding. Community colleges receive just $10,000 (Mullin, 2010). Because they have no admission requirements, Community colleges educate many students who are unprepared for more selective institutions. A 2008 study by the Community College Research Center at Columbia University reports that 33% of entering community college students tested into remedial English and 59% required

remedial math (2017). Community college student populations are also significantly more diverse, both in terms race and socioeconomic status, than traditional four year schools. According to the National Center for Education Statistics (2017) wealthy students outnumber poorer students at elite universities at a rate of fourteen to one. Community colleges, by contrast, enroll two times more low-income students than high income students and more African American and Hispanic students than white students (National Center for Education Statistics, 2017b).

Historical Background on American Community Colleges

The first community colleges in the US appeared in the early 20th century as enrollment in public high schools ballooned and increasing national attention was focused on educating a skilled workforce to improve the nation's economy. Because of their reluctance to leave their local communities, only a quarter of the nation's growing number of high school graduates were continuing to higher education. Between 1901 and 1921 nearly two-hundred junior colleges were established, clustered mostly in the Midwest and South. More than half were private institutions affiliated with religious organizations (Brint & Karabel, 1989). During the first half of the 20th century community colleges drew advanced local students and had rigorous admissions criteria. They also enrolled a disproportionate number of female students to meet the growing need for local grammar school teachers who were not required to obtain a bachelor's degree (Geller, 2001).

Enrollment at community colleges grew substantially in the 1940's due to the Servicemen's Readjustment Act (i.e. The GI Bill), which provided tuition assistance for returning WWII veterans and set the precedent that higher education should be

affordable and open to all Americans regardless of social class or financial challenges (Beach, 2012). The growing community college movement was given a larger boost in 1947 when the Truman administration released the report of the Presidential Commission on Higher Education for American Democracy which called for a nationwide network of newly named "community colleges" based on the junior college model. The report laid out many of the foundational framework used for community colleges today. Institutions were to be locally controlled and funded, open both to high school graduates and working adults, offer both technical and general education, serve as local cultural centers, and be accessible to all students regardless of background or financial circumstance (Hutcheson, 2002). Community colleges received a second wave for support from federal legislation in 1963 as the first members of the baby boom generation were nearing high school graduation. The Higher Education Facilities Act passed under the Johnson administration allocated nearly half a billion dollars over three years for federal matching grants for states wishing to build technical and community colleges (Kim, 2007; Cook & King, 2007). This was followed in 1965 with the establishment of Basic Educational Opportunity grants from the federal government which provided tuition support for low income students wishing to pursue post-secondary credentials. (Gilbert, 2013).

As a result of these federal policies, as well as changing demographics and workforce needs, the number of community colleges in the US more than doubled to 847 institutions during the twenty-year period from 1950-1970 and reached 1,000 by 1980 (Cohen, Brawer,& Kisker, 2013). As community colleges expanded, the number of students able to access higher education expanded dramatically and community

colleges adapted their missions from credentialing advanced students unable to travel to increasing access to higher education for lower achieving, financially challenged or socially disenfranchised groups. Selective admissions criteria were dropped and institutions prioritized low tuition (Jurgens, 2010).

The proportion of American postsecondary students attending community college has continued to grow since midcentury. In 1969, when the federal government adopted its current categorization system for higher education institutions, 26% of all college students attended two-year schools. By 2005 thirty-seven percent of American college students were enrolled at two-year schools and the proportion topped 40% in the years following the 2008 recession (Brock, 2010). In 2014, 12.8 million students enrolled at community colleges across the United States (Zeit, 2014). More recently, political leaders have championed increasing federal and state support for community colleges, including free tuition. (Pingel, Parker, & Sisneros, 2016). Tennessee, Rhode Island, Nevada, Oregon, California and the city of Chicago have all implemented free community college tuition programs or pilots (Cannon & Joyalle, 2016; Emanuel, R., & Haslam, 2017).

LIS Literature about Community Colleges

In part because of lower expectations for publication among community college faculty, less LIS research has focused on community college than on traditional academic libraries (Zeit, 2014; Hill, Best, & Dalessio, 2012; Fry, 2009; Groce, 2008). According to Reed (2015) this underrepresentation in the library literature has made "the challenges and successes that take place in the community college world are largely invisible to others (p. 235)." Leeder (2013) makes an identical assertion, noting

that “in the world of academic librarianship community college librarians are relatively invisible (p. 189). A single academic journal. *Community & Junior College Libraries,* is devoted to community college libraries, but released just two of a planned four issues in 2013, 2014, and 2015 and a single issue in 2016 with only two research articles. No issues have been published in 2017.

However, a substantial body of research has focused on the unique information need and behavior of community college students. Hassig (2003) studied the reactions of returning and first-time community college library users and found that they reported “fear, frustration, helplessness and inadequacy (p. 51).” Similarly, Ashe (2003) explored the information habits of community college students and found they needed more general research and writing support than students at four year colleges who required more specific disciplinary research skills. Bontenbal (2000) gathered reactions of older community college students and found similar results. Community college students, specifically non-traditional students, were apprehensive to use library services and devoted more time to the information seeking process than traditional students. Community college librarians may struggle to adapt the traditional information literacy instruction to the unique needs of workplace oriented community college students.

Coates (2013) administered the Information Literacy Test (ILT) developed at James Madison University to 580 students from both a small rural community college and a large urban community college. The study found that the vast majority (95% and 80% respectively) scored in the below proficient range but also overestimated their self-assess proficiency, even after completing the test. Hill, Best, and Dalessio (2012) confirmed the finding through comprehensive surveys of education, LIS, and electrical

engineering literature and found no studies of information literacy for electrical engineering students at the community college level and noted that information literacy instruction sessions and library databases neglect the information tools practicing electricians might use on the job in favor of traditional academic sources.

Several authors including Buczynski (2005), Arnold (2010) and Raley and Smith (2006) argue that community college libraries struggle to address the information needs of work-related programs stems not from an oversight by community college librarians themselves, but instead from a larger failure of library vendors to produce databases, collections, and tools to serve learners outside of traditional academic disciplines. However, in other field, notably in the medical field, community college librarians are better attuned to workforce skills. Epstein (2016) studied information skills of paramedic science students at a New Jersey community college and found that information literacy sessions prepared "workforce-ready" students familiar with the information skills and tools they use on the job. Argüelles (2015) conducted a similar study of information literacy outcomes for a pilot librarian/faculty collaboration to integrate library instruction into a community college health program and found notable gains among participants. Bird, Crumpton, Ozan and Williams (2012) surveyed information literacy practices at community college libraries and found that they were geared toward students continuing to traditional four-year programs and neglected the needs of vocational and technical students. Relatedly, French (2004) challenged the use of traditional peer-reviewed academic scholarship in community college information literacy instruction arguing that scholarly work was an "uneven match" for community college student populations (p. 13).

A substantial part of the published literature on community colleges consists of editorials, columns, and personal reflections which underscore the unique mission of community college libraries and their differences from traditional academic institutions. McKay (2011) argued that modern community college libraries are "spinning straw into gold" as they update both their facilities and services to better support the community college's increasingly important role given recent changes in the US labor markets. Leeder (2013), for example, writing in the *Journal of Library Administration*, asserts that community colleges' open access mission and teaching focus make the goals and practices of community college librarians distinct from those of other academic librarians.

While libraries at traditional institutions, especially those at universities with graduate programs, must balance advanced researchers' need for comprehensive collections and undergraduates need for easy-access and information literacy skills, community college librarians can focus exclusively on teaching and customer service and deprioritize the depth of their collections. Similarly, Neufeld (2014), also writing in the *Journal of Library Administration*, notes that community college librarians must be uniquely mindful of students' backgrounds when communicating library services and research processes. Fisher (2015) makes an analogous point by underscoring the importance of engagement and personal connection in driving community college populations to make use of library services.

Complicating the prevailing narrative that community college libraries are importantly distinct from their four year peers are a handful of studies that use identical methods to compare 2-year and 4-year library populations. Carey and Pathak (2017),

for example, compared the most and least preferred methods for conducting reference between community college and traditional college students and found nearly identical rates of preference for face-to-face reference (74% vs 70%) and distaste for email reference services (21.1% vs 26.5%). Karas and Green (2007) conducted a similar review of the information needs and information seeking behavior of community college and lower division undergraduate students and found that both groups had similar gaps in research skills and resource evaluation.

Johnson (2007) published the single study employing data from a LibQUAL+ administration at a community college. Johnson describes the steps used to implement a LibQUAL+ survey at the Todd Library of Waubonsee Community College campus in Sugar Grove, Illinois in 2005. Johnson does not report the total enrollment of the Sugar Grove Campus in 2005, but in 2017 it enrolled 14,861 students across all four of its campuses, employed 118 full time faculty, 501 adjunct faculty, cost $118 per credit hour, and had a student population that was 59% Caucasian, 26% Hispanic, 8% black, 4% Asian and 3% those of other ethnicities (Waubonsee Community College, 2017). Johnson (2007) received 667 total responses during a LibQUAL+ administration, the majority of which (556) were from students. Respondents were incentivized with a free beverage to be consumed in the library as well as an optional drawing to win a portable CD player, jump drives, and gift certificates to the campus bookstore. Johnson found that the majority (36.5%) of student respondents reported using resources on the library premises weekly, but nearly as many reported using the library monthly (25.5%) or quarterly (23.7%). Nearly equal fractions of students reported using the library daily (6.6%) or never (7.7%). Recorded in a 1-9 Likert scale Johnson (2007) reports that

student respondents rated the "overall quality of the service provided by the library" an average of 7.39, faculty provided an average rating of 7.64, and staff provided an average rating of 7.64. As with many LibQUAL+ reports, Johnson (2005) does not report outcomes for the three LibQUAL+ dimensions or any advanced statistical analysis of the results or raw LibQUAL+ data. Johnson (2007) does however report that survey results promoted library leaders to add a new full-time, tenure track librarian and staff its satellite campuses with professional librarians two times per week.

Non-User Studies in LIS

As described above, studies of users and usage are very common in LIS research, but only a handful of studies over the decades have looked at non-users specifically and even fewer have explored their perceptions of library services. In nearly every case, non-use of libraries is explored as a pathology and a problem to be fixed. Users are seen not as a group of potential supporters but instead only as future users, lapsed users, or ill informed. For example, Slater (1981) described non-users as "neglectful" and Butcher (1997) titled her article with the gripe "why don't managers use information?" These attitudes are typical. Always, the non-use of library services was seen as a problem and almost always it was seen as a failing on behalf of non-users.

The most salient and comical example of libraries' distaste for their non-users was published by Madden (1980) writing for the University of Illinois Graduate School of Library Science. Data were collected from a general marketing survey conducted by advertising agency Leo Burnett, where respondents were asked to agree or disagree with 200 questions including "how frequently did you use the library in the last year?" Madden published the top fifteen and bottom fifteen activities, interests, and opinions

correlated with library users and non-users. These results are a fascinating window onto the then raging Culture Wars. Female non-users were reported to agree with statements like “I get satisfaction out of cleaning,” “television is my primary source of entertainment,” “the US would be better without hippies,” “everyone should drink milk” and “I like the look of a large lamp in a picture window.” The reported opinions of male non-users were equally insular. Male users were reported to most strongly believe that “all men should be clean shaven every day,” “communism is the greatest peril in the world,” “everything is changing too fast,” and “I dread the future.” By contrast, frequent library use was reported to be linked with cosmopolitan and, most notably, upper-class interests such as “most of my friends graduated from college,” “I’d like to spend a year in London or Paris,” “I’ve brought work home,” and “I served wine with dinner.” The results were accompanied with satirical cartoons of a paranoid, gun-toting non-user and an erudite, multitasking frequent user wearing a mortarboard. The obvious class overtones of these characterizations go unremarked upon. Notably, Madden does depart from the common view of non-users as potential users, but only because he sees them as a lost cause:

> “The woman who does not use the library is a very unlikely candidate for any kind of library outreach program. Her interests and activities as a group are too limited. . she is not interested in varying or enlarging her everyday activities. From a cost benefit point of view, there is every indication that extensive effort on the part of the library would show very discouraging results (p. 81).”

Although Madden's negative depiction of non-users is the most grievous in the literature, a disdainful tone is shared by much of the non-user literature from the last several decades.

Dedicated study of non-users began in the late 1970's and early 1980's. Wharley (1978) issued a call for a study of non-users as an "untapped market" for library services. Slater (1981) published the first in-depth study of non-users with an unusual methodology: surveying business librarians rather than asking non-users directly. The study found that 93% of respondents had encountered non-usage and most respondents recommended education campaigns and awareness campaigns as a potential solution. The problem, librarians assumed, was that non-users simply did not know what the library offered, not that they did not need or were not interested in library services.

Mays (1985) used data gathered from then-novel library computer systems to compare freshman check-out statistics with student data including major, grade point average, and dropout rate. The study found that a plurality of freshman (33.5%) reported checking out fewer than 6 books over the course of the year and a significant fraction (11%) used no books at all. Interestingly, library usage levels varied widely by major. Education and humanities majors checked out library materials at less than a third of the per-student rate of students in the sciences and engineering. Mays also found that library usage did not have a strictly positive relationship with GPA. He divided students into quintiles and found that, while the highest-borrower group reported the highest GPAs, medium-low borrowers performed better than both high-borrowing groups and those who used the library less frequently or not at all. Most interestingly, he found that book checkouts were positively correlated with likelihood of dropping out. Low-borrowers

dropped out the least, followed by medium-low borrowers, then by medium-high borrowers. The highest dropout rates were among high and non-borrowers. Low borrowers' dropout rates were more than 10 percentage points lower than their high-borrowing classmates. According to Mays (1985), checking out many books from the library was associated with higher dropout rates. In the face of this data, Mays found potential evidence to counter previous findings that non-users are less academically inclined than users. In explanation, he blames libraries, an unrigorous curriculum and, in the only apparent instance in the literature, the assumption that libraries "should be justified by their use (p. 57)."

Sridhar (1994) published a frequently cited theoretical study of non-users. In addition to noting, as many other scholars of non-users have, that "user research has totally ignored the study of non-users" (p. 2), Sridhar reminds the LIS profession that using a library is a "minority event." Even though LIS scholars and information professionals use libraries nearly every day, most citizens use the library very infrequently and a plurality does not use the library at all (p. 3). Non-users outnumber users. Thus, Sridhar concludes, LIS researchers and librarians must stretch to understand non-users and not write them off.

Unfortunately, Sridhar's (1994) call for more in-depth study of non-users went largely unheeded by the field. The next major study of non-users was published five years later by Brick (1995), a special librarian at Credit Suisse. Drawing on the same methodology as Slater (1981), Brick surveyed library managers about non-users and non-usage rather than studying non-users directly. This work bears many of the hallmarks of previous non-user research. It laments the lack of previous scholarship in the area: "so

called user research has, on the whole, largely ignored the non-user" (p.195). It predicts a decline in library usage because of new technologies: "recent advances in information systems have led to changes in the nature of non-use. Use of the information centre directly was seen to have declined, with users becoming more self-sufficient" (p. 198). Finally, the study identifies "lack of awareness" as the chief reason for non-use. Seventy-eight percent of her respondents agree this is the main reason patrons choose not to use the library (p. 199).

Five years after Brick (1995), McNicol (2004) used a similarly unorthodox methodology to overcome the difficulties in studying non-users: the study employed historical, documentary research. It found that respondents believed that non-users were most commonly: (a) boys and young men, (b) teens, and (c) those with poor literacy skills. Respondents guessed that frequent users were likely to be drawn from the heavily educated but also from socially excluded groups as well as mothers with children. Most notably, the study found that both users and non-users alike considered libraries important institutions although they expressed dislike for both library staff and paying fines. One of McNicol's (2004) findings is notable for challenging LIS's assumption that all non-users are potential users. MicNicol (2004) reports that "several non-users could not think of anything which would entice them to use the library" (p. 85). Efforts to recruit them, it seems, would be fruitless.

Toner (2008) also contains the hallmarks of previous non-user research: (a) non-users are flagged as a "hard-to reach target group" for research (p. 18), (b) previous non-user research is identified as "scarce" (p. 20) and (c) after finding the library is not being used by a significant minority of her campus the study ultimately concludes that poor

awareness and promotion is to blame: “the library needs to be much more creative in its marketing, publicity, and promotion to non-user groups” (p. 28). Toner mailed surveys to the 21% of her university’s student body who had logged in to the university’s online library system less than three times in the previous twelve months. The researchers received a 14% response rate. The study found that library non-users were clustered among those in their first and second years at the university and just 1% (n=5) of non-user respondents chose “I do not like libraries” from a menu of reasons for their non-use (p. 25). Distance from the main campus was the main reason cited for non-use. As with other studies, Toner’s work shows that a large percentage of student populations never use the library; however, these students do not dislike libraries.

White and Stone (2010), practitioners at the University of Huddersfield, published the next major study of academic library non-users. Using a now common methodology White and Stone gathered usage data from three sources: (a) off-campus access to eResources, (b) book loans, and (c) entry into the library from the gate counter. White and Stone’s short, practitioner-focused study describes their results using bar graphs, instead of more rigorous inferential statistics, and includes little analysis of the previous literature, as only Toner (2008) is cited. However, White and Stone found that for most majors there was “apparently no correlation between library visits and student attainment” and “usage could and indeed should be significantly higher” (p. 88). As with other studies, the authors find this “unexpected” and recommend “targeted promotion” and “raising awareness” as the solution (p.89). They also worry that their “ongoing refurbishment work” of the library building during data collection may have negatively

impacted their results. Their findings of high levels of non-use and a limited connection between usage and student outcomes echoes what several other authors have found.

Consonni also released a study on academic library users in 2010, this time focusing on a university's digital library. Similar to other studies, Consonni criticizes the field for its "non-existent" body of non-user research and that "the topic is mentioned in a few researches [sic] as a challenge, but never seriously tackled" (p. 326). Consonni (2010) focuses on what he calls "factual non-users," "people who use a service just once and then decide not to use it anymore" (p. 326). The researchers emailed surveys to students who accessed the digital library through off-campus connections just one or two days during 2009 and received a 17% response rate. Interestingly, the study found that 88% of the small sample of non-users reported they know the digital library well and 94% of responding non-users declared themselves to be satisfied with the library. Consonni (2010) describes these findings as "paradoxical" because they indicate that "non-users, despite their limited use, think they have a good knowledge of the digital library's possibilities and are satisfied with it," (p. 329). Consonni's study of non-users does depart from previous research in an important way. This study was the first to ask respondents to indicate their level of knowledge about library services, and because he found that the vast majority of respondents report strong knowledge of library services, he's unable to conclude that non-use comes from lack of awareness or poor marketing. Instead, he concludes that while they're satisfied with the library, non-users do not use the library "mainly because they simply do not need it" (p.329).

Unfortunately, all of the non-user studies mentioned in this section have limited datasets and less rigorous methodologies because of the challenges in recruiting non-user

participants for research studies. With response rates often in the teens, finding a group of non-users large enough for powerful inferential statistics is a challenge. Ironically, the LIS study with the largest dataset of non-users almost includes its non-user findings as an afterthought. Thompson, Kyrillidou, and Cook (2007) published a LibQUAL+ study which compared usage of tools like "Yahoo, Google and other non-library gateways" with usage of on-premises libraries. They used a huge dataset drawn from the 295,355 respondents who completed the LibQUAL+ survey in 2003, 2004, and 2005. Most of their study focuses on changes in usage of search engines, which had grown substantially in the years since 2007, and in comparing international groups, as respondents completing the survey in British English used Google more frequently than those completing the survey in American English. However, their third research question, presented in a single paragraph, compared opinions of library services among four types of users based on their reported frequency of use of non-library online gateways and physical libraries. Crucially, their study included the group "nonusers," defined in the study as those who reported using both web gateways and physical libraries less than quarterly. Surprisingly, the table presenting this data indicates that American postgraduates and faculty in this nonuser group rated the library more highly than the other three groups along all three LibQUAL+ dimensions: Affect of Service, Information Control, and Library as Place. This surprising finding from a large dataset collected with a rigorous measure goes unremarked upon in the body of the study. The substantial bibliography of their study also does not cite any of the scant non-user research described here or engage with the issue of non-user opinions. Readers are given little direction in interpreting these surprising results.

Quantitative Research in LIS

The present study is exclusively quantitative in nature and no qualitative analysis is included. The "QUAL" in LibQUAL+, the instrument used for this study, stands for quality not qualitative. All of the analysis in this study is strictly quantitative. This section presents a brief summary of the use of and debate about quantitative research within LIS and reviews the foundational concepts of the statistical tests used in this research.

As an interdisciplinary field, a number of different research orientations, including quantitative, qualitative, and mixed methods approaches, are widely used in LIS. Quantitative methods were popular in the founding decades of LIS when the discipline's focus was on library systems and collections. However, in the late 1980's and 1990's new calls for a stronger theoretical base within LIS led a handful of thought leaders within the discipline to critique the positivist assumptions of the field and call for the embrace of more humanistic, qualitative approaches (Radford & Budd, 1997; Budd, 2001; Dick, 1994; Radford, 1992; Radford, 1998; Leckie, Givens, & Buschman, 2010). Most recently, in the late 2000's a small group of scholars both within LIS and from other disciplines, notably Creswell (2003), began to champion mixed methods research as a way to move the field forward (Johnson, Onwuegbuzie, & Turner, 2007; Tashakkori & Creswell, 2007; Teddlie & Tashakkori, 2003). However, the few studies that have been published indicate mixed-methods approaches may have yet to gain significant traction (Fidel, 2008)

A large body of research indicates that quantitative approaches, despite strong critiques of quantitative, positivist orientations from within the academy, have remained the most popular orientation within the LIS literature and several subfields since the mid-

1970's (Hilder & Pumm, 2008; Clyde, 2004; Julien, 1997; Blake, 1994; Kumpulainen, 1991; Järvelin & Vakkari, 1993). The present study is quantitative in nature. Quantitative research often uses experimental designs or large data-sets gathered using structured, formal research instruments to allow for reproducibility regardless of context. This numerical data is then analyzed using established statistical techniques and presented in tables, graphs, and charts (Bryman, 2008). Because of its replicability and transparency but limited interpretive depth, quantitative research is often appropriate for beginning, descriptive research in which basic facts about the subject matter must be established before being further explored using qualitative or mixed methods. Thus, as descriptive research, quantitative methods are well suited to this research project. The present study, which aims to inform practice as well as expand our scholarly understanding of non-user preferences, is in keeping with this broad quantitative tradition.

Descriptive Research

Descriptive research is used when relatively few studies have been conducted within a given research area. Rather than seeking to explore, explain, or evaluate phenomena, descriptive research seeks instead to establish the basic facts within a field of study. Descriptive research asks 'what' questions rather than 'how' or 'why' questions. Research Question 1 falls directly within descriptive research (Creswell, 2007).

As described in the literature review, relatively few studies in the LIS literature have directly assessed perceptions of academic library services among those who report using libraries infrequently (McCarthy, 1994; Lange, 1988; Fasick & England, 1977) and no studies using the highly respected LibQUAL+ instrument have adequately assessed, analyzed, and discussed nonusers. Although scores of LibQUAL+ studies have been

published examining nearly every data facet and demographic from the survey including race, age, and subject of study (Elteto, Jackson & Lim 2008; Kalb, 2010), only Thompson, Kyrillidou and Cook (2007), have used the reported usage levels collected in the LibQUAL+ survey in their research design. Their study grouped non-users and infrequent users (i.e., those who use the library less than quarterly) into a single group. No previous study has used LibQUAL+ data to focus only on the perceptions of those who report never using the library at all. As a result, even the most basic facts, such as whether non-users report higher or lower levels of satisfaction with academic libraries, are unknown. Because of this relative dearth of related research, the current study is descriptive in nature.

Part of the gap in the literature related to non-users is due to the difficulty of recruiting non-users to participate in library research studies (Brick, 1999; Millar, 2004; White & Stone, 2010) and part is due to a laudable focus on user needs among both practicing librarians and LIS researchers. Indeed, even the structure of the LibQUAL+ reports prepared by the ARL for participating institutions discourage attention to non-user perceptions. Although these standardized reports include detailed breakdowns by user group, discipline, and several demographic factors, no breakdown is presented based on reported usage despite this data being collected within the survey.

Another part of the gap in the literature can also be explained by assumptions made by both researchers and practitioners that non-user perceptions of service quality should not be taken into account. We would not ask a friend who has not read a book if it is good, so why should perceptions of service quality among non-users be considered valid? This study challenges this assumption on several grounds: (a) many other public

institutions, including schools, poverty programs, and public transit, enjoy strong positive perceptions among those who will never use them, (b) non-users financially support libraries, and (c) in these challenging times, libraries may be ignoring an important base of positive perceptions.

Comparison Research

Comparison research is a sub-category of Explanatory research. Explanatory research builds on descriptive and exploratory research to attempt to explain the mechanism, connections, and causes within social phenomena (Schutt, 2015). Often, by the time exploratory research is conducted theories and constructs within a field have significantly coalesced (Field, 2013). The instrument used in this study, LibQUAL+, has been substantially tested and remains one of the most rigorous and respected academic library assessment measures in the field and has been used by scores of published studies and more than 1,200 institutions worldwide (Furnival & Pinto, 2016; Choi, & Chung, 2015; Greenwood, Watson, & Dennis, 2011) including more than 15 in the last year alone (e.g. Furnival & Pinto, 2016; Min & Jeong, 2016; Natesan & Aerts, 2016; Xi, Li, Zhao, He & Cai, 2016). LIS statisticians have rigorously tested LibQUAL+ for reliability, construct validity, and internal consistency using multitrait multimethod analysis, factorial invariance, and randomized controlled trials and its three dimensions, Affect of Service, Library as Place, and Information Control, have been confirmed as valid and reliable (Natesan, Ponce, Chavez, 2015; Kieftenbeld & Natesan, 2013; Natesan & Aerts, 2016; Thompson, Kyrillidou & Cook, 2009).

Thus, LibQUAL+ is suitably developed to allow for comparison research like Research Questions 2-4 in this study. Research Questions 2-3 ask about the differences

between respondents reporting different levels of usage and the differences among the three LibQUAL+ service dimensions. Research Question 2 asks if non-users report significantly different perceptions of service quality from all other more frequent groups (daily, weekly, monthly, and quarterly users) together and from each usage group independently. Both of these are comparisons. Research Question 4 examines the possible interaction between levels of usage and the three LibQUAL+ dimensions when determining overall perceptions of service quality. This complex question will tell us how respondents' levels of usage impacts which LibQUAL+ dimensions drive their overall service quality perceptions. Interaction results could indicate, for example, that daily users' perceptions of service quality overall are significantly impacted by their response in the Information Control dimension, but the Library as Place dimension has the largest effect on the overall perceptions of non-users. In this case, we could conclude that libraries hoping to please very frequent users should focus on collections at the expense of facilities, and libraries hoping to please non-users prioritize facilities over collections. These comparative research questions are possible only because the LibQUAL+ tool's constructs have been confirmed by other studies and are well established by the field.

Chapter Summary

This chapter reviews several bodies of literature related to the present study. It begins by drawing on both LIS and campus facilities research to explore previous research about both users' and non-users' perceptions of academic libraries and their role on campus and reports that libraries are highly regarded, influential in enrollment and giving decisions, and linked with student success and campus value (Association of Higher Education Facilities Officers, 2007; Chapman, 1998; Clotfelter, 2001; Hanssen & Solvoll, 2015; Lai, Siok, Yusof, & Kok, 2011; Reynolds, 2007). It then summarizes the

academic library usage literature going back seven decades and reports both that a significant plurality of student populations never use the library a single time and that traditional measures of usage have declined in recent years (Allison, 2015; Applegate, 2008; Branscomb, 1940; Consonni, 2010; Goodall & Pattern, 2011; Kyrillidou, Morris & Roebuck, 2014; Mann, 1974; Mays, 1985; Soria, Fransen, & Nackerud, 2013; Thompson, Kyrillidou & Cook, 2007; University of Toronto Libraries, 2015). The chapter then turns to a summary of the users and usage focused paradigm that has dominated LIS since the late 1970's and how this generally salutary trend has left a notable gap in the literature related to non-users (Dalrymple, 2001; Dervin, 1977; Zweizig, 1976; Zweizig, 1977; Zweizig & Dervin, 1977). These three literatures are then braided into a central question: why are libraries perceived more positively than they are used? Following this, the two theoretical foundations of this study, Signaling Theory and Stakeholder Theory, are comprehensively summarized. The chapter then reviews the literature related to community colleges with a particular emphasis on community college library studies and finds a notable literature gap in this area (Zeit, 2014; Hill, Best, & Dalessio, 2012; Fry, 2009; Groce, 2008)). All of the existing non-user studies in LIS are then summarized and the large and longstanding gap in the literature related to non-users is explored (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994). The final section of this chapter summarizes seminal works related to the epistemological and methodological foundations of this study including intra-disciplinary disagreements about quantitative and descriptive research as a way of knowing in LIS (Radford & Budd, 1997; Budd, 2001; Dick, 1994; Radford, 1992; Radford, 1998; Leckie, Givens, & Buschman, 2010).

Chapter 3: Methods

This study examines the perceptions of library service quality among non-users and more frequent users using previously unanalyzed data gathered with the LibQUAL+ survey at a large, Midwestern community college in the Spring of 2016. The purposes of this study are to better understand the non-users' perceptions of library service quality and determine whether there are any differences in the service quality dimensions between library non-users and users. This chapter presents the three research questions and relevant eight hypotheses of this study, provides a brief overview of quantitative methods within LIS including descriptive and comparison research, and reviews the results of LibQUAL+ studies which have confirmed the reliability, validity and rigor of the instrument (Lane, Anderson, Ponce, & Natesan, 2013; Natesan, Ponce, Chavez, 2015; Natesan & Aerts, 2016). The heart of this section describes the research design, data collection procedure, statistical analysis as well as limitations and opportunities for further research.

Data from the LibQUAL+ administration were analyzed using a 3 x 5 mixed-design ANOVA to determine differences in perceptions of service quality between non-users and more frequent users as a whole as well as groups who use library services daily, weekly, monthly and quarterly. Interaction effects between each of these groups and the three LibQUAL+ dimensions (affect of service, information control, and library as place) were analyzed with the 3 x 5 mixed-design ANOVA analysis. Basic descriptive statistics were used to illustrate the perceptions of service quality among groups of non-users and users.

Research Questions

The research questions in this study are

RQ1: What are the perceptions of library service quality, as measured using the LibQUAL+ survey tool at a large Midwestern community college, among those who never use library services (i.e. 'non-users)?

RQ2: Is there any significant difference in overall perceptions of service quality among non-users and user groups of daily, weekly, monthly and quarterly frequency?

RQ3: Is there any significant difference in perceptions of library service quality among the three LibQUAL+ dimensions of affect of service, information control, and library as place?

RQ4: Is there an interaction effect between usage level and the LibQUAL+ dimensions of library service?

Hypotheses

Signaling theory predicts that usage levels and perceptions of service quality will not be linked because individuals evaluate libraries for their signaling value rather than their use vale (Spence, 1973). Similarly, stakeholder theory states that libraries serve a variety of stakeholders, including both users and non-uses, and therefore usage levels and perceptions of service quality should be independent of each other (Freeman & Reed,

1983). Based upon theories from the literature described in the previous chapter, this study proposes the following hypotheses:

H1: There is no significant difference in overall perceptions of service quality between non-users and *all groups of daily, weekly, monthly and quarterly users combined together*.

H2: There is no significant difference in overall perceptions of service quality between non-users and *daily users*.

H3: There is no significant difference in overall perceptions of service quality between non-users and *weekly users*.

H4: There is no significant difference in overall perceptions of service quality between non-users and *monthly users*.

H5: There is no significant difference in overall perceptions of service quality between non-users and *quarterly users*.

H6: There is no significant difference between the 3 LibQUAL+ dimensions.

H7: There is no interaction effect between usage level and the dimensions of library service.

Instrument: LibQUAL+

LibQUAL+ (Association of Research Libraries, 2017) is a web-survey used by academic libraries to evaluate users' perceptions of their service quality. It is composed of 22 triple-Likert questions measuring respondents' minimum, desired, and perceived levels of library service quality on a 1 (low) -9 (high) scale. It measures library quality along three dimensions: (a) affect of service, (b) information Control and (c) Library as place. A short form of the survey, called LibQUAL+ lite (Thompson, Kyrillidou & Cook, 2009), relies on random item sampling to reduce the survey's length to just eight questions and was developed in an effort to improve response rates. Although each individual respondent receives only eight items, not every respondent receives the same eight items. Random item sampling distributes eight of the twenty-two LibQUAL+ items, two or three for each dimension, to each respondent. Thus, each of the twenty-two items gets answered, but individual respondents are not asked to answer all questions. LibQUAL+ lite was designed to gather a smaller amount of data from each respondent, but compensates for this by improving the number of respondents who complete the survey. The full version of LibQUAL+, by contrast, gathers a greater amount of data from individual respondents, but it may dissuade respondents because of the longer, 22-item survey they receive. Libraries are free to choose to use the short or long versions of the instrument. In this study, respondents were randomly assigned to receive and complete either the full LibQUAL+ survey or the short version, LibQUAL+ lite. Half of the surveyed population who opened the invitation email received the full version and half of survey population received the lite version. The version recipients were assigned

was determined by a randomizing computer program included with the LibQUAL+ online survey.

LibQUAL+ is among the most well-known and respected assessment tools used by academic libraries to measure service quality. Created by the Association of Research Libraries (ARL) LibQUAL+ is among the most highly respected and widely used academic library assessment tools (Detlor & Ball, 2015). LibQUAL+ was created in 2000 by Martha Kyrillidou, Fred Heath, and Colleen Cook at Texas A&M University. LibQUAL+ was widely adopted as a tool for assessing library quality during the early 2000's and by 2007 it collected data from its millionth user and thousandth institution. Libraries have used LibQUAL+ to assess their services in 27 countries and the ARL offers the tool in 12 different languages (Association of Research Libraries, 2017; Thompson, 2012). In addition to its popularity among practicing libraries, the LIS research community has also adopted LibQUAL+ as a research tool. LIS journals have published hundreds of articles using the LibQUAL+ methodology (Choi & Chung, 2015; Greenwood, Watson, & Dennis, 2011; Furnival & Pinto, 2016) including more than 15 in the last year alone (e.g., Furnival & Pinto, 2016; Min & Jeong, 2016; Natesan & Aerts, 2016; Xi, Li, Zhao, He & Cai, 2016).

LIS statisticians have rigorously tested LibQUAL+ for reliability, construct validity, and internal consistency using multitrait multimethod analysis, factorial invariance, as well as other methods (Lane, Anderson, Ponce, & Natesan, 2013; Natesan, Ponce, Chavez, 2015; Natesan & Aerts, 2016). The three LibQUAL+ dimensions, Affect of Service, Information Control, and Library as Place, boasts Cronbach's alpha coefficients well above the widely accepted validity threshold of .8. While some authors

have critiqued LibQUAL+ on philosophical grounds for encouraging what they see as a damaging, neoliberal culture of assessment (Lilburn, 2017; Rovito 2010; Saunders, 2007), the instrument and methodology is one of the most established measures of perceived library quality among both the practitioner and scholarly communities.

LibQUAL+ Survey Structure

LibQUAL+ is a web survey that consists of 22 triple-Likert items using a 1-9 scale measuring respondents' perceptions of academic libraries using three dimensions: (a) Affect of Service, (b) Information Control, and (c) Library as Place. On the 1-9 scale, 1 is labeled as "low" and 9 is labeled as "high," and no other response choices are labeled (Thompson et al., 2005). Respondents also answer basic demographic questions including their educational goal, full or part-time status, discipline, age, sex and, crucially, how often they use the library. Library usage is self-reported at one of five levels: (1) daily, (2) weekly, (3) monthly, (4) quarterly, or (5) never. Respondents indicate their level of usage for both the "resources on [the] library premises" and "resources through a library web-page" (ARL, 2017).

The triple-Likert structure of LibQUAL+ means that each survey participant responds to each item three times, first to establish their "minimum" requirements, second to establish their "desired" level of service and finally to rate their "perceived" level of service. This approach, which establishes minimum and maximum requirements and then asks respondents to position the library within them, seeks to establish a "zone of tolerance" into which libraries can measure themselves against user expectations. The present study uses results from only one of these Likert responses: perceived levels of service quality. Perceived levels of service quality are most relevant to this study which

focuses on respondent's impressions of the library as it is, rather than how they would like it to be.

When libraries complete a LibQUAL+ survey ARL provides them with two types of output: (a) a cursory report presenting them with a simple summary of their data and (b) a large dataset from which to run their own analyses. The cursory report includes only descriptive statistics (e.g. means, standard deviations, ranges) and focuses exclusively on demographic statistics and the comparison of minimum, desired, and perceived levels of service quality. The standard LibQUAL+ report is meant to function as an alarm system to alert libraries to areas where their perceived levels of service quality exceed desired levels (indicating inefficient over-investment) or are below minimum expectations (indicating a need for service improvements) (Brown & Swartz, 1989).

This so called "gap analysis' is done automatically for all LibQUAL+ participating institutions but is unrelated to the present study. The present study relies on data collected using the LibQUAL+ instrument available in the dataset that has not been analyzed. The present study is different from the gap analysis presented in the cursory report in many fundamental ways. First, the gap analysis does not break down users by usage level. The responses of frequent users are aggregated and reported with those of infrequent or non-users so any comparison between usage levels is not possible. In the present study, comparing responses between non-users and more frequent users is a key question. Secondly, the standardized report uses all three Likert responses from the LibQUAL+ survey: (a) Minimum, (b) Desired, and (c) Perceived. The present study relies only on reported perceived levels of service quality. Analysis using desired and minimum levels is not undertaken, in part because the relationship between these

variables has already been well explored in the research literature. A final important difference between the present study and the cursory report already created using this data is the rigor of more advanced statistical techniques. The cursory report uses only descriptive statistics, while this study uses a 3x5 mixed design ANOVA. This statistical test will analyze variance levels to determine differences in perceived levels of service quality between non-users and each more frequent user group as well as measure any interaction differences among usage groups and the three LibQUAL+ dimensions of service quality. An analysis of this type or depth is not included in the cursory LibQUAL+ report and no published studies have explored non-user groups, much less interaction differences along the three LibQUAL+ dimensions. The present study thus represents original research on previously unused data to ask novel questions within the research literature.

LibQUAL+ vs LibQUAL+ Lite

Immediately following its development, the researchers at Texas A&M University that designed LibQUAL+ conducted a well-cited meta-analysis of factors impacting response rates to web surveys (Cook, Heath, & Thompson, 2000). They found that survey length was one of the most important factors influencing response rates. Unsurprisingly, shorter surveys which take less time to complete enjoy higher response rates than longer instruments that require a greater time commitment. In response, the LibQUAL+ development team set a goal of improving response rates by decreasing the length of LibQUAL+ while maintaining validity along all three service quality dimensions (Thompson, Cook & Heath, 2003). The short form of the survey they eventually developed was called “LibQUAL+ lite.”

The 22 questions used on the original LibQUAL+ were winnowed down from an initial set of 55 core items. Through rigorous testing, the development team determined which items were more useful in measuring users' perceptions of service quality along each dimension. The least useful questions were discarded (Thompson, 2012; Association of Research Libraries, 2017). So, when the team began to create a yet shorter form of the survey they were working with an already culled list of questions.

Rather than cut questions from the subset, the team decided to rely on an item sampling method to reduce the length of the survey for any particular user while still ensuring that every question is answered. First, three core questions which appear on every survey were selected based on statistical criteria from factor analysis that shows which three items have the strongest relation with the underlying dimension measured (Kyrillidou, 2010). Then, each user is also shown a randomized mix of 5 additional questions, spread proportionally from each of the dimensions from the 22 item long-form survey. Finally, basic demographic questions are collected from every user. Therefore, each user is shown a unique survey with three main components: (a) 3 core questions which appear on every survey, (b) a randomized mix of 5 additional questions, and (c) basic demographic questions. Because response rates tend to be higher on shorter forms of the survey, item sampling still allows institutions to gather data on all individual items without asking every respondent to slog through every one. The tradeoff LibQUAL+ Lite offers to institutions is to gather less data from more respondents rather than more data from fewer users. In the years following its development the item sampling method used in LibQUAL+ Lite was tested using randomized controlled trials for its effect on data integrity, score norms, and zone of tolerance boundaries, and it was shown that, if

response rates are high enough, the short form can produce results as reliable as those provided by the full survey.

A randomized controlled trial comparing the full and lite versions of LibQUAL+ was conducted using data from four universities in the USA (Thompson, Kyrillidou & Cook, 2009). The study found that while scores on the lite version of LibQUAL+ were lower than the full version, response rates and completion times were substantially improved. Just 49.18% of participants in this study who opened the survey and were randomly selected to receive the full 22-item version ended up completing the survey. By comparison, 62.9% of those receiving the shorter version ultimately completed the survey. The full version of the survey had a mean completion time of 470.5 seconds while the lite version took respondents an average of only 285 seconds to complete (Thompson, Kyrillidou & Cook, 2009). Buttressing these results, a 2010 study, comparing the full and Lite forms of LibQUAL+ using 1,908 responses from a university which administered the survey in Hebrew, found the following differences in 1-9 Likert perceived service quality means between the long and lite versions: Affect of Service .01, Information Control .48, Library as Place .21 (Thompson, Kyrillidou & Cook, 2009). The lite version of LibQUAL+ has also been thoroughly vetted. Thompson, Kyrillidou, and Cook (2010) used data from 16 diverse institutions and 13,383 participants to compare the data integrity between LibQUAL+ lite and the full version of the instrument. Cronbach's alpha coefficients for the full and lite versions of the survey are as follows: Affect of Service - Long: 0.939 versus Lite: 0.943; Information Control - Long: 0.903 versus Lite: 0.897; Library as Place - Long: 0.861 versus Lite: 0.867; Total - Long: 0.956

versus Lite: 0.955 (Thompson et al., 2010). Mean service quality rankings are substantially similar between the long and lite versions of the instrument.

Each institution administering LibQUAL+ is given the opportunity to choose what percentage of those who view their survey will be given the full version of LibQUAL+ and what percentage will be given the lite version of the protocol. They may choose to have 100% of participants complete the full 22 question instrument or to have 100% of their participants complete the short version or any ratio in between. If the institution chooses to use both the full and lite versions of the survey, participants are assigned either the short or long form of the survey at random. In this study, in consultation with the institutional research office and the research team described below, 50% of participants were assigned the full version of the protocol and 50% of respondents the lite version in order to compare relative response rates for future surveys.

LibQUAL+ Dimensions

LibQUAL+ measures service quality along three dimensions: (a) Affect of Service, (b) Information Control and (c) Library as Place. These three dimensions correspond roughly to customer service, collections, and facilities. They are described in greater detail below.

Affect of Service. Affect of service is meant to measure the quality of the customer service provided by library employees. Nine survey items were developed and adopted in the LibQUAL for this measurement. Questions in this dimension ask if staff are friendly, supportive, and helpful. Example LibQUAL+ questions that measure affect of service include asking participants to evaluate whether “employees instill confidence in users” or

whether “employees are consistently courteous.” The affect of service dimension mainly reflects perceptions of library staff.

Information Control. Information control is designed to measure both the quality of library resources and the ease of use of library systems. Eight survey items in the LibQUAL+ survey are used for this measurement. This includes printed library materials, electronic information sources, technology and equipment, and search and discovery tools. Example LibQUAL+ questions measuring information control include assessments of the “print and/or electronic journal collections I require for my work,” “a gateway for study, learning, and research” and “the printed library materials I need for my work.” LibQUAL+’s Information Control dimension tells libraries whether respondents have convenient access to the content that they need.

Library as Place. The final quality dimension used in LibQUAL+ is Library as Place. This dimension measures respondents’ perceptions of the physical facilities of the library including the building, study spaces, furniture, and interior design. A total of five survey items within LibQUAL+ are used for this measurement. Sample LibQUAL+ questions meant to measure the Library as Place dimension include asking respondents to rate a library’s “Quiet space for individual activities,” “comfortable and inviting location,” and “Community space for group learning and group study.” The Library as Place LibQUAL+ measures the library as a physical space.

Reliability and Statistical Rigor

One of the principal advantages of LibQUAL+ is its proven statistical rigor and highly standardized administration guidelines. Because the tool has been used by hundreds of libraries going back more than a decade, results can be compared not only

with peer institutions administering LibQUAL+ during the same year but also historical data from previous years (Detlor & Ball, 2015). As discussed in the previous chapter, reliability tests conducted using 20,416 LibQUAL+ responses found Cronbach's alpha coefficients well above the .8 threshold for all three dimensions and the survey overall: Affect of Service (9 items) alpha = .948, Information Control: (8 items) alpha = .866, Library as Place: (5 items) alpha = .929, total score for all items (22 items) alpha = .948 (Thompson, Cook & Thompson, 2002). This indicates a high level of reliability across all dimensions.

Further, LibQUAL+ includes internal consistency measures to ensure results are valid. Respondents are asked similar questions multiple times and if their responses are found to be contradictory, for example because a respondent was filling out the survey randomly rather than in keeping with their true perceptions, their response is thrown out and not included in the results (Natesan & Aerts, 2016). LibQUAL+ is among the most rigorous statistical measures of perceptions of academic libraries available (Lane, Anderson, Ponce, & Natesan, 2013; Natesan, Ponce, Chavez, 2015; Natesan & Aerts, 2016).

Critiques of LibQUAL+

LibQUAL+, however, is not without its critics. A handful of authors have raised objections to the tool, and to quantitative assessment more broadly, for encouraging a culture of assessment and numerical evaluation which threatens the traditional role of academic libraries or presenting a narrow or misguided view of library services. Saunders (2007), for example, argues that librarians, because of their professional training, are better able to judge library quality than the less-informed users of a quality survey the

LibQUAL+ instrument targets. Similarly, Rovito (2010) worries that LibQUAL+ misapplies the damaging "customer" concept from the business world and forces libraries to "pander to the momentary perceptions of library customers" rather than "work toward long-term contributions to society without pressure to conform to the competitive user driven climate of the for-profit sector" (p. 147). Lilburn (2017) echoes these concerns and finds LibQUAL+ to be emblematic of a growing "audit culture" within academia which is "not designed to help higher education meet its own disciplinary or pedagogical goals but are instead used to hold higher education accountable to neoliberal goals" (p. 95). In Lilburn's view, LibQUAL+ is not a measure of service quality but instead an exercise in quantification designed to please academic administrators rather than improve academic libraries.

Despite these objections, the present study adopts LibQUAL+ as a measurement instrument in research. The objections raised in the literature are solely theoretical in nature and constitute a very small minority, in comparison to the larger majority of researchers who have demonstrated, repeatedly, its reliability and validity. Even if it is not without theoretical flaws, it is among the most accepted and widely used tools for measuring perceptions of service quality for both researchers and practicing librarians. Further, one potential application of this study is by library practitioners hoping to persuade higher education administration and leadership to consider a broader base of positive perceptions of academic libraries. Even if Saunders (2007) and Rovito (2010) were correct that LibQUAL+ is a tool used more for persuasion rather than for understanding, LibQUAL+ could have substantial impact as a research instrument because of its broad adoption and persuasive ability.

Design

This project used data collected by the researcher and a team of library, college, and institutional research staff in the spring of 2016. These data were also used for a routine evaluation of the administering's library service quality, but no further analyses have been conducted to explore the service quality by usage levels or their potential impact on the LibQUAL+ service dimensions. This study uses the data collected by a cross-sectional survey design to describe and explain stakeholders' perceptions of academic library quality among those who report never using library services and compare them to those who use library services. Data were collected using an established survey instrument, the ARL's LibQUAL+ tool (ARL, 2017), to measure perceptions of quality and standard statistical techniques were used to analyze the potential differences in perceptions about library services.

Research Setting

Participants in this study were drawn from students, faculty, and staff at a large, Midwestern community college during the Spring semester (January to May) of 2016. The college has an open enrollment policy. During this period, the institution had a total credit enrollment (headcount) of 19,139 with a full-time equivalent (FTE) count of 10,493. The median age of all students attending the college was 20 years old and the average age of students was 24. Thirty-two percent of students were enrolled full time and 68% of students were enrolled part time. The self-reported ethnicity of the total student population was 68% Caucasian, 9% Hispanic, 6% African American, 4% Asian, 1% American Indian or Alaskan Native, 5% unknown, 3% non-resident alien, and 3% two or more races. Tuition and fees at the college were $93 per credit hour for those

residing within the same county as the college, $110 per credit hour for students residing within the same state, $135 per credit hour for those residing within the bi-state metro area of the college, and $220 for those attending from out of state. Seventy-six percent of students were county residents, 15% of students were residents of different counties within the state, 5% of students resided in the metro area but outside of the state, and 4% of students came from out of state. The college employs 310 full time faculty and 561-part time faculty as well as 588 full time staff members and 844-part time staff members. (Johnson County Community College, 2016).

The campus is situated in a suburban setting outside of a mid-sized city in the American Midwest. It is an all commuter campus with no on-campus housing. The campus includes 22 buildings on 245 acres, 48 programs of study, 116 degree and certificate options and more than 1,400 full and part time staff. The college has an average cost of $7,534 per year, has a 14% completion rate and a $35,800 average salary after attending. Seventeen percent of students receive federal loans, and the typical borrower takes out $9,000 in total debt. Forty-six percent of students who took out debt while at the institution are paying down with a typical monthly loan payment of ninety-two dollars. Sixty-three percent of students return after their first year (US Department of Education, 2017).

The community college library collection has more than 130,00 volumes, 50,000 journals, 15,000 videos, 45,000 music recordings and 1.5 million art and architecture images. The library contains 100 computer workstations and wireless access to students, staff, faculty, and community members. There are also 400 seats for student study and 7 study rooms for private use or groups. It employs a staff of 36 across all departments and

levels including six full time library faculty members and ten part-time library assistants, five part-time library clerks, a systems specialist, a library director, and technical services staff. The library has a total annual expenditure of $1,859,151 including $601,281 for materials and $587,311 for staff salaries and wages. (Johnson County Community College (JCCC), 2017)

Data Collection

The LibQUAL+ survey used in this study was administered by an interdisciplinary team following the 2016 LibQUAL+ procedures manual (Davis, Groves, & Kyrillidou, 2016) from May 22 to April 12th 2016 among students, faculty, and staff of a large, Midwestern community college. A random half of participants received the long (22 item) form of the survey and the other half of participants received the Lite (8 item) form of the survey, which uses random item sampling to collect data on all 22 items by showing users a random selection of items along each dimension rather than the full battery.

The unit of analysis in this study is the individual survey respondent. Participants were drawn from a population of students, staff, and faculty at a large, Midwestern suburban community college. This was a population-wide survey, in keeping with the survey implementation protocols of the LibQUAL+ tool. Print and digital marketing campaigns to recruit participants were designed by the LibQUAL+ implementation team. The use of a cross-departmental implementation team was recommended by the 2016 LibQUAL+ procedures manual to ensure support from multiple campus departments (Davis, Groves, & Kyrillidou, 2016). Raffle entry was offered as an incentive to survey participants who chose to enter their contact information after completing the survey. To

ensure confidentiality and anonymity, survey data and contact information were kept in two unassociated databases. Participants who chose to enter their contact information were entered into a drawing for one of 18 fifty-dollar gift-cards for on-campus dining or use in the bookstore. Distribution of gift-cards was recommended by the 2016 LibQUAL+ procedures manual and LibQUAL+ on-site training as a non-coercive incentive for completing the survey (Davis, Groves, & Kyrillidou, 2016). The use of on-campus gift cards was mandated by policy from the Office of Institutional Research of the college.

The LibQUAL+ survey used to gather data for this study was administered May 22 - April 12th 2016 by an interdisciplinary planning team led by the researcher. Team members were drawn from across the library division at the administering institution and included the Director of Libraries, two faculty librarians, one-part time reference librarian, one library associate, one library aide, and a research analyst from the Department of Institutional Research. The team was composed of both library leadership, dedicated research professionals, and frontline staff to ensure perspectives from across all levels were included. Team members were nominated by the researcher in collaboration with the Director of Libraries and met for one year from August 2015 until July 2016 to administer the survey through four stages: (a) Planning, (b) Marketing, (c) Implementation, and (d) Results discussion and wrap up**.** The subscription cost for administering the tool was $3,200 and was provided by the college.

The research team assisted with the planning, promotion, and marketing of the LibQUAL+ survey, but the survey items themselves are fixed by the Association of Research Libraries. The survey is administered on the internet and was distributed to the

population via custom email with reminders sent weekly during the survey period. Although hard copies of the survey were available for use at all library service desks, none were submitted. In order to increase the response rate, the team promoted the survey during the administration period using postings on library social media accounts, slides on the campus digital signage system, promotion on the campus learning management system, and screensavers and desktop backgrounds on library computer stations. All of these promotional methods were recommended by the LibQUAL+ implementation guide distributed by the ARL as well as a specialized LibQUAL+ training the researcher attended during the American Library Association (ALA) Midwinter meeting in Chicago, IL in January 2015.

Participants and their Stratified Representativeness

The respondents in this study self-selected to complete the survey. Individual, personalized survey invitations were e-mailed at the population level to all students, faculty, and staff at the administering colleges in the Fall of 2016, as well as periodic reminder e-mails during the three-week survey administration period. A total of 19,966 full and part time faculty staff and students received survey invitations and reminder e-mails. 1,215 valid responses were gathered generating a campus-wide response rate of 6.2%.

Respondents demonstrate a good degree of representativeness to the population in demographic factors. By sex, slightly more respondents self-reported their sex as female (62.7%) than the campus population as a whole (52.29%). Table 1 compares the self-reported sex of respondents with those of the campus as a whole.

Table 1

Data Representativeness by Sex.

	Population		Respondents	
Sex	*N*	*%*	*n*	*%*
Female	10,481	52.49	744	63.70
Male	9,485	47.51	441	36.30
Total	19,966	100	1,215	100

Reported discipline of study also closely tracked population level data. Figure 1 and Table 2 compare the reported discipline of respondents with that of the campus population as a whole. The greatest disparity was between the percentage of respondents (13%) that came from the disciplines of science and math than the percentage of science and math students in the population as a whole (21%). English/communications and computers science/information technology were also slightly underrepresented among the respondents. Respondents from two disciplines, humanities and education, were overrepresented among respondents. Nine percent of respondents reported being from the education discipline, but this group represents less than one percent of the population as a whole. Nine percent of respondents also reported being from the humanities field, but this group constitutes just 5% of the population overall. In general, the reported disciplines of respondents closely match the disciplines of the population overall.

Table 2
Data Representativeness by Discipline

	Population		Respondents		
Discipline	*N*	*%*	*n*	*%*	*%N - %n*
Agriculture	0	0.00	10	0.93	-0.93
Trades	423	2.12	27	2.52	-0.40
Architecture	320	1.60	72	6.73	-5.13
Business	1,551	7.77	118	11.03	-3.26

Communications	234	1.17	58	5.42	-4.25
Education	229	1.15	81	7.75	-6.42
Engineering	1,919	9.61	15	11.68	-2.07
Heath Sciences	493	2.47	193	18.04	-15.57
Humanities	6,072	30.41	60	5.61	24.80
Law	0	0.00	34	3.18	-3.18
Science/Math	946	4.74	119	11.12	-6.38
Social Sciences	298	1.149	54	5.05	-3.55
Undecided	7,481	37.47	119	11.12	26.35
Total	19,966	100	1,070	100	0.00

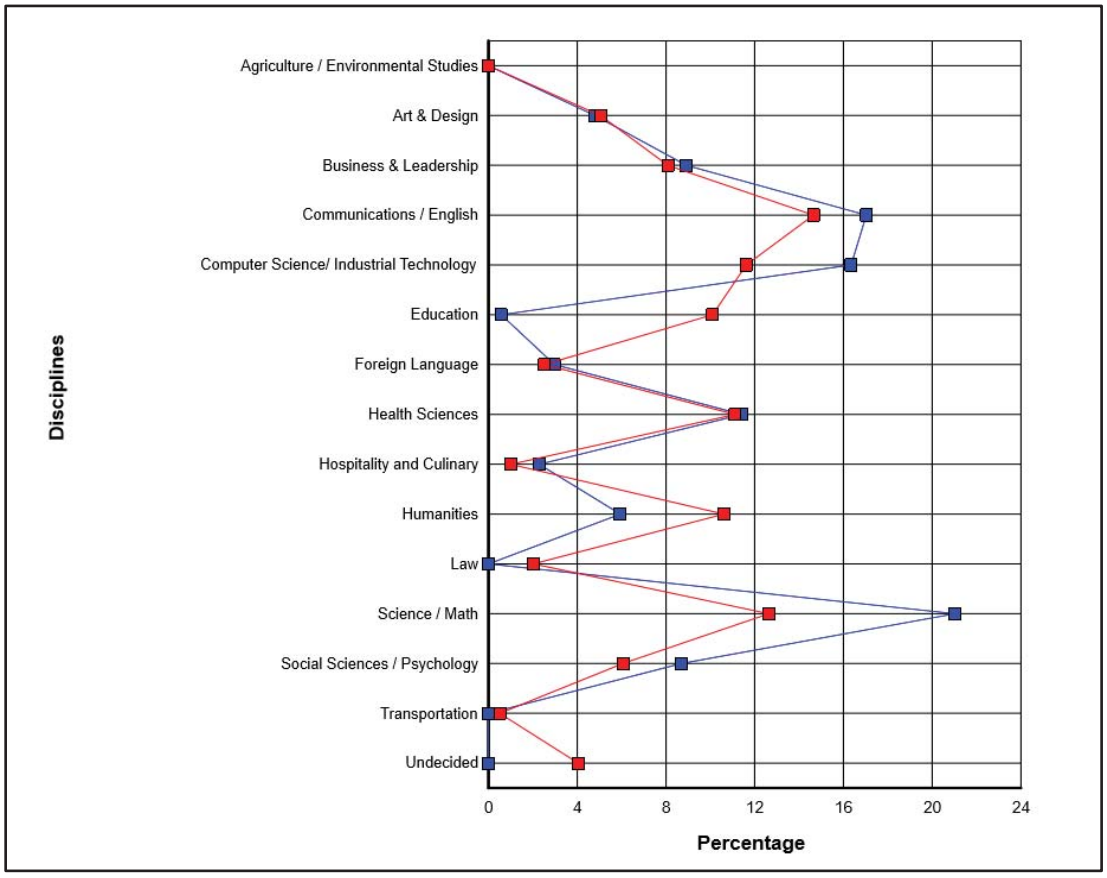

Figure 1. Data representativeness by reported primary discipline.

Table 3 and Figure 2 summarize the stratified representativeness of the data to the overall population by user sub-group including role at the college (transfer student, degree student, full time faculty, part time faculty, staff, etc.) and again displays a good fit between respondents and the population as a whole. Fewer student respondents (32%) reported their educational objective as transferring to a four-year college than the population as a whole (50%) and full and part time faculty are slightly over-represented in the responses (11% and 8% respectively) than the population as a whole (5% and 3% respectively). A notable discrepancy in the data exists between students reporting their educational objective as obtaining a certification among the respondents (4%) versus the campus population as a whole (22%) and respondents reporting their educational objective as obtaining an associate's degree (27%) in comparison with the population as whole (0%). This error is due to an unfortunate error in how population statistics were reported to the ARL during implementation. The reported percentages of the population pursuing associates degrees were switched with the percentages of those pursuing certifications. Once this error is corrected, respondent sub-groups will closely match the population as a whole.

Table 3

Data Representativeness by Sub-Group

	Population		Respondents		
User Sub-Group	*N*	*%*	*n*	*%*	*%N - %n*
No definite purpose (Student)	0	0.00	19	1.76	-1.76
Self-improvement (Student)	817	7.20	23	2.13	5.07
Job-related courses (Student)	460	4.05	21	1.95	2.11
2 year college transfer (Student)	0	0.00	51	4.73	-4.73
4 year college transfer (Student)	5,672	49.97	369	34.20	15.77
Vocational program (Student)	0	0.00	29	2.69	-2.69
Maintain certification (Student)	2,716	23.93	39	3.61	20.31
Associates degree (Student)	0	0.00	298	27.62	-27.62
Other (Student)	811	7.14	31	2.87	4.27
Part-time (Faculty)	555	4.89	84	7.78	-2.90
Full-time (Faculty)	320	2.89	115	10.56	-7.84
Total					

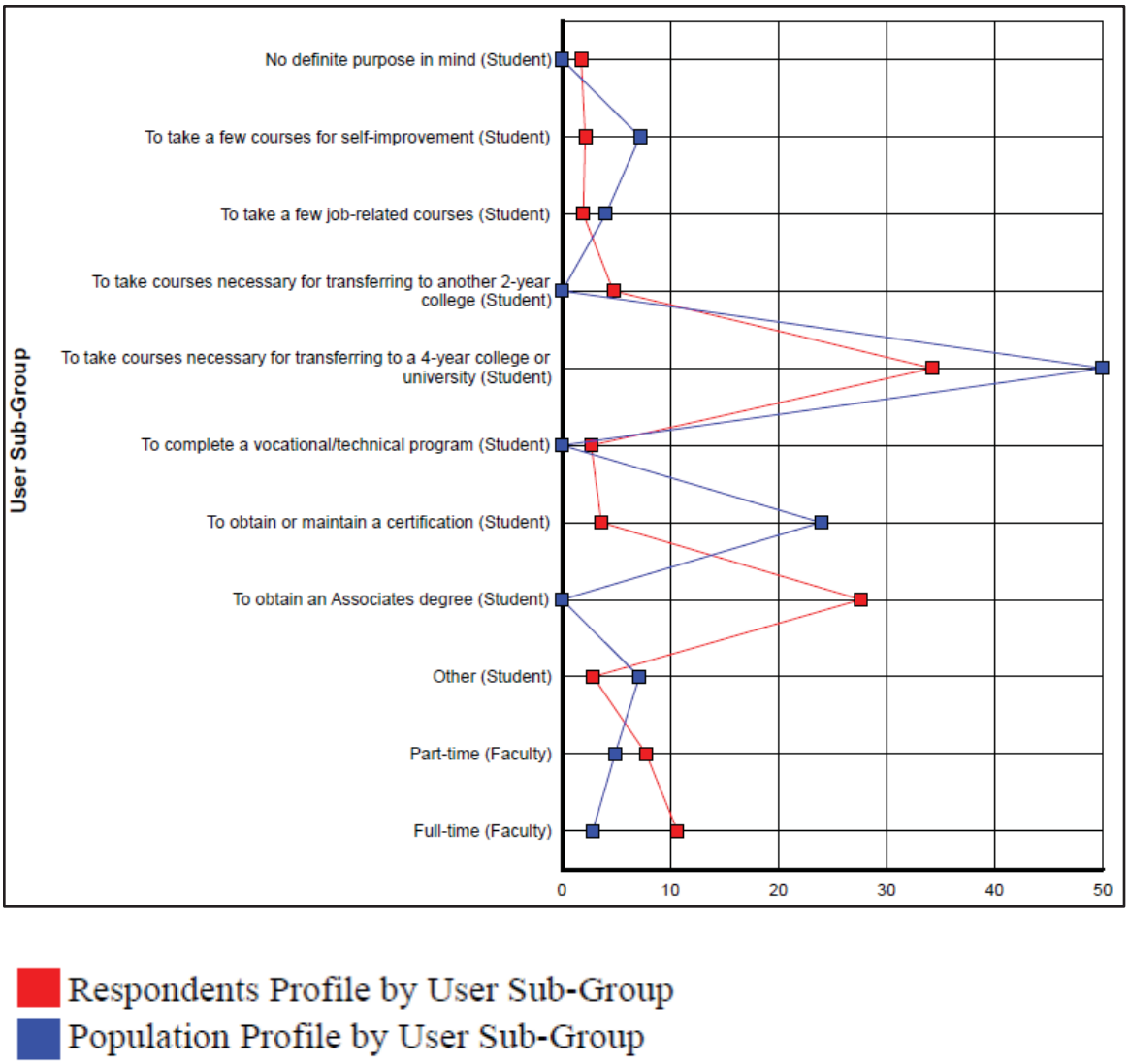

Figure 2. Data representativeness by respondent sub-group

Table 4 displays a breakdown of respondents by self-reported age. A plurality of respondents (38.7%, n=465) reported their age as 18-22 years, with the second biggest group of respondents (21.73%, n=264) reporting their age as 46-65 years. Because the campus does not collect or report aggregate age statistics for its faculty, staff, and students as a whole, these respondents' ages are difficult to compare with the population

overall. The median age of students in the population is 20 years and the average age is 24.

Table 4

Respondent profile by age.

	Respondents	
Age	*N*	*%*
Under 18	28	2.30
18 – 22	465	38.27
23 – 30	219	18.02
31 – 45	193	15..88
46 – 65	264	21.73
Over 65	45	3.79
Total	1,215	100

Statistical Analyses and Variables

Data were analyzed using IBM SPSS Statistics for Windows, Version 22.0 (2013). Both descriptive and inferential statistics were used on the LibQUAL+ data to test the hypotheses. As descriptive research, Research Question 1 was addressed by using descriptive statistics including measures of variability and central tendency. As comparative research, Research Questions 2-4 were addressed by using inferential statistics produced with a 3 x 5 mixed-design ANOVA. The independent variables include the LibQUAL+ dimensions (3-level within groups) and library usage level (5-level between groups). The dependent variable is the perceptions of service quality.

Descriptive Statistics

Descriptive statistics provide basic information about the perceptions of library service quality among the non-user and user groups in addressing Research Question 1. Specific statistics used for the analysis include:

Means. Means are a measure of central tendency. They are calculated by totaling all responses to a given item and dividing by the number of responses. They can distill a long list of individual responses to a given variable into a single number that indicates what a typical respondent answered. Means are most useful when data are normally distributed or not badly skewed (Field, 2013).

Range. Range is a descriptive statistic which illustrates the highest and lowest scores within a single variable. It describes the extremes of opinion within a dataset. It represents the bounds of the domain of values for a given variable (Schutt, 2015)

Standard deviation. Standard deviation is the square root of the variance within a data and measures the amount of dispersion of data values. It indicates whether responses are grouped together around the mean value or more widely distributed. Standard deviation is also used to evaluate the extent to which a given value is outside the norm. A response well above or below the mean may not indicate an outlying data point if it is within the standard deviation of a dataset.

3 x 5 Mixed-Design ANOVA

A 3 x 5 mixed-design ANOVA is used to evaluate the following comparative research questions:

> **RQ2**: Is there any significant difference in overall perceptions of service quality among non-users and user groups of daily, weekly, monthly and quarterly frequency?
>
> **RQ3**: Is there any significant difference in perceptions of library service quality among the three LibQUAL+ dimensions of affect of service, information control, and library as place?

RQ4: Is there an interaction effect between usage level and the LibQUAL+ dimensions of library service?

3 x 5 mixed-design ANOVA is used to analyze the variance between independent groups subjected to repeated measures. It is used when a study has two independent variables, one of which is between subjects (in this case reported usage levels) and one of which is within subjects (in this case LibQUAL+ dimensions) (Field, 2013). The dependent variable for this analysis is service quality overall, as measured by a combination of all 22 LibQUAL+ items.

A mixed-design ANOVA can be used with two independent variables with two or more levels. It combines the repeated measure, in this case the dimensions of service quality, with the independent variable, in this case usage level (Field, 2013). This study will use a 3 x 5 mixed-design ANOVA because the within-group independent variable of LibQUAL+ dimension has three levels (Affect of Service, Information Control, and Library as Place), and the between groups independent variable of usage level has five levels (Daily, Weekly, Monthly, Quarterly, and Never).

In order to answer Research Question 2, the main effect of user versus non-users' variable in the 3 x 5 mixed design ANOVA determines the difference in the dependent variable (overall perceptions of service quality) among the five independent groups of different usage levels. Similarly, for Research Question 3, the main effect of the service dimension in the 3 x 5 mixed design ANOVA determines the difference in the same dependent variable, the perceptions of service quality among the LibQUAL+ dimensions. Crucially, the 3 x 5 mixed design ANOVA also examined the interactional differences

between the two independent variables in addressing Research Question 4. Although these resource questions could be answered using a series of parallel one-way ANOVAs, answering them using a single inferential test decreases the likelihood of Type 1 error by limiting the possibility of finding a positive result merely by chance (Field, 2013; Schutt, 2015).

Research Ethics and Care of Data

This project has been approved by the IRB boards of both the institution at which the LibQUAL+ survey was administered and Emporia State University. As an internationally recognized web-based research instrument, LibQUAL+ has an established, rigorous method for ensuring anonymity and confidentiality in keeping with the highest standards of research ethics. LibQUAL+ uses the American Psychological Association (APA) code of ethics to guide its approach to data privacy, disclosures, record keeping, and dissemination (American Psychological Association (APA), 2016) and the ARL's official policies for protecting human subjects (Association of Research Libraries, 2002). To protect respondent's anonymity, e-mail addresses and other identifying information are only captured from respondents who opt-in to be entered into incentive drawings and survey results and contact information are collected and warehoused in separate repositories. Once e-mail addresses and survey responses are collected, there is no way to link an individual's response with their email address.

Because no-hard copy surveys were submitted, all LibQUAL+ responses were entered directly by respondents. These responses are housed at a private, secure hosting facility and only authorized users, in this study, the research team, can obtain access to results report or raw data. As a 501(c)(3) non-profit entity the ARL is not eligible to

formally participate in the United States' implementation of the International Safe Harbor privacy standard, however ARL has privacy practices in place that comply with the Safe harbor guidelines (ARL 2015; US Government, 2016).

Description of the Researcher

This research was conducted by a practicing faculty librarian at the community college campus on which the survey was administered. The researcher serves as the Copyright Librarian on campus where he administers all intellectual property initiatives and fulfills traditional librarian and faculty responsibilities including reference, collection development for four campus departments, information literacy instruction, library task-force leadership, and campus committee service. The researcher had been in this role for six years at the time this research was conducted.

Limitations

This research study has several limitations that restrict its generalizability, limit the power of its conclusions, and provide opportunities for further research.

Response rate, availability sampling, and self-reported data may impact representativeness and generalizability

This study relied on self-selection to gather responses. Invitations to participate in the LibQUAL+ survey were sent out to the entire campus population of 19,966 and received a response rate of 6.2%. This availability sampling has two important drawbacks. First, because a sample was not constructed to match the demographics of the campus as a whole, the demographics of the availability are not perfectly representative of the campus as a whole. Secondly, the lower response rate may limit the generalizability of the findings.

Secondly, all data used in this study are self-reported. Notably, this includes usage level. Respondents themselves indicate whether they are daily, weekly, monthly, quarterly, or non-users. This represents a limitation in comparison with studies based on direct records of usage because respondents may either be unaware of how often they use library sources, or they may intentional misreport their usage level. If enough respondents misreport usage, then the analysis used in this study, which compares perceptions based on responses to this question, would also be inaccurate. While the items on LibQUAL+ related to library quality and the dimensions of service quality have been tested for reliability in previous studies **(**Lane, et al., 2013; Natesan, Ponce, Chavez, 2015; Natesan & Aerts, 2016**)**, the usage level question has not been.

Community College Libraries May Be Importantly Different

Although this study has a large number of participants (1,200), all were recruited from a single, large Midwestern community college. Although research indicates that a majority of undergraduates enroll in 2 year schools, data drawn from a broader group of schools and students would paint a fuller picture of non-user perceptions. Demographic data collected from respondents can be compared with demographics of the population of the campus and higher-education as a whole to determine representativeness. However, it may be the case that respondents' perceptions are importantly different in a way not measured by demographic characteristics. For example, the perceptions of upper-level undergraduates and graduate students, because of their need for specialized, specific resources, are importantly different than students in their freshman and sophomore years. Although an all commuter community college is not representative of the higher education landscape as a whole, the case can be made that it is a valuable test ground for

non-user research. Further, understanding non-users could be especially important for institutions of this type. Studies of non-users have found a higher-percentage of non-users among part-time or distance education students (White & Stone, 2010) and undergraduates in their first or second years of school (Consonni, 2010; Soria, Fransen, & Nackerud, 2013) than other demographic groups. Toner (2008) found non-users list "distance from the library" as the most common reason for non-use. Community colleges are all beginning students, many of whom are part time, or online, and because none of them live on campus, all are distant from the library. Based on previous literature, we would expect commuter community colleges to have the largest non-user populations. This makes non-users easier to recruit and addresses the unique opportunity non-users represent at two-year campuses.

Non-Users Who Complete Library Surveys May Not Be Representative

Another notable limitation is the self-selection used to recruit participants to this study. All LibQUAL+ implementations use a population-wide survey in which only some respondents choose to participate. This significantly limits the types of stakeholders from whom data is gathered. Although representativeness calculations will be run within the data to determine if respondents share demographic characteristics with the population as a whole, individuals who ‘opt-in’ to take a library web-survey may not be representative of the population as a whole in their perceptions of library services, even if their demographic characteristics match with the larger population. This may be an especially important challenge when studying non-users because of lower levels of engagement with or knowledge of library services among those who do not use the library. As noted extensively in the literature review, non-user groups are difficult to recruit and study**.**

Despite incentives for participating, non-users may be self-selecting out of a library survey if they perceive themselves as having little to offer because of their lack of experience with library services. Conversely, non-users who choose to participate in library surveys may be importantly different in their perceptions of library services than non-users who choose not to participate because of their engagement and interest in libraries. Finally, it may be the case that the survey respondents are simply mis-reporting the frequency of their use. Those who report never using the physical or digital library may simply not be aware of when they have used a library service or space because it has been integrated into their coursework or other routine.

Use value and artefactual value are undifferentiated within the data

A final notable limitation within this study is that these data used within fail to capture which part of respondent ratings of service quality are due to use value and which part respondent ratings are due to artefactual or signaling value. Veblen (1899) described two types of value: (a) use value and (b) artefactual value. Use value is the benefit an individual gains from the actual use of the item. Artefactual value is the benefit an individual gets from the ownership, display or signaling value of an item. Within this study, these two types of value are conflated for all but the non-user group. Non-users perceptions must be driven exclusively by artefactual value, because they have no use-value on which to base their ratings. For all other user groups, these data do not describe how much their ratings are driven by use value and how much they are driven by artefactual value. This could complicate comparisons between these groups and the non-user groups (H1 – H5) because frequent users could be rating use value while non-users are rating artefactual value. LibQUAL+ was designed to measure use value, and in this

study we are using it to measure artefactual value. This is an important challenge to consider, and it would apply equally to any LibQUAL+ study and would also limit the effectiveness of studies of strictly use value, because artefactual value is also measured by LibQUAL+ However, RQ1, which reports only on the non-user groups without comparison, is not subject to these limitations.

Chapter Summary

This quantitative project explores non-users' opinions about academic library services using the LibQUAL+ survey instrument. Created by the ARL, LibQUAL+ is the gold-standard in library assessment tools and consists of 22 triple-Likert items measuring respondents' opinions of academic libraries along 3 dimensions: (a) Affect of Service, (b) Information Control, and (c) Library as Place. The data for this project were collected from 1,200 responses to a LibQUAL+ survey administered by the researcher and an interdisciplinary team at a two-year college in the suburban Midwest during the Spring of 2016. These quantitative data are analyzed using basic descriptive statistics as well as a 3 x 5 mixed-design ANOVA to determine intergroup differences and interaction effects between the user and nonuser groups and three LibQUAL+ dimensions. In keeping with the research literature described in the previous section, it is hypothesized there will be no significant differences between user and nonuser groups and no significant interaction effects.

Chapter 4: Results

The purpose of this research study is to explore perceptions of community college library services among those who self-report rarely or never using the library and compare those perceptions with those of individuals who self-report higher levels of usage. The data for this study were gathered using the Association of Research Libraries (ARL's) LibQUAL+ instrument, a 22 item triple Likert survey measuring perceptions about library services along three dimensions: (a) Affect of Service, (b) Library as Place, and (c) Information Control. The instrument was implemented in the Spring of 2016 at a large, suburban Midwestern community college resulting in 1,286 responses.

The research questions in this study are:

> **RQ1:** What are the levels of perception of academic library service quality, as measured using the LibQUAL+ survey tool at a large Midwestern community college, among those who never use library services (i.e., 'non-users)?
>
> **RQ2**: Is there any significant difference in overall perceptions of service quality among non-users and more frequent users overall?
>
> **RQ3**: Is there any significant difference in perceptions of library service quality among the three LibQUAL+ dimensions: (a) Affect of Service, (b) Information Control, and (c) Library as Place?
>
> **RQ4**: Is there an interaction effect between users and non-users among the three LibQUAL+ dimensions of library service?

The hypotheses in this study are:

H1: There is no significant difference in overall perceptions of service quality between non-users and *all groups of daily, weekly, monthly and quarterly users combined together*.

H2: There is no significant difference in overall perceptions of service quality between non-users and *daily users*.

H3: There is no significant difference in overall perceptions of service quality between non-users and *weekly users*.

H4: There is no significant difference in overall perceptions of service quality between non-users and *monthly users*.

H5: There is no significant difference in overall perceptions of service quality between non-users and *quarterly users*.

H6: There is no significant difference between the 3 LibQUAL+ dimensions.

H7: There is no interaction effect between usage level and the dimensions of library service.

Research Question 1

The first research question of this study was to describe the perceptions of library services among the self-reported non-users and users. Table 1 shows the means and standard deviations of the general perceptions for each usage level across each dimension.

Table 1

Descriptive statistics of each user group by dimension of service quality.

Dimension and usage group	*M*	*SD*	*n*
Affect of Service			
Non-user	7.2018	1.75045	118
Quarterly user	7.3079	1.48280	247
Monthly user	7.4907	1.33263	273
Weekly user	7.6396	1.28492	427
Daily user	7.4744	1.60561	174
All users	7.4758	1.43775	1239
Information Control			
Non-user	6.9594	1.87162	118
Quarterly user	7.1918	1.39670	247
Monthly user	7.4818	1.17980	273
Weekly user	7.6146	1.31674	427
Daily user	7.5582	1.42006	174
All users	7.4307	1.39642	1239
Library as Place			
Non-user	6.9312	2.15737	118
Quarterly user	7.3384	1.41791	247
Monthly user	7.4854	1.30699	273
Weekly user	7.6906	1.47193	427
Daily user	7.4966	1.50925	174
All users	7.4756	1.52530	1239

Notable Findings about Respondents Overall

A first notable finding is that the size of the usage-level groups is not equal. As described above, the size of the non-user (*n*=118), quarterly user (*n*=247), monthly user (*n*=273), and daily user (n=174) groups are largely similar, but the size of the weekly user group is significantly larger than the others (n=427). The fewest respondents identified as non-users or daily users, significantly more respondents identified as quarterly or monthly users, and the greatest number of respondents identified as weekly users. Indeed, more than twice as many respondents identified as monthly or quarterly unders than non-

users and more than three and a half times as many respondents reported being weekly users than non-users. Figure 5 displays the size of each usage group as a proportion of total respondents.

A second notable finding in the descriptive statistics is that perceptions are largely similar and largely positive. The means for all user-groups across all dimensions as well as the survey overall, are all within a single point (on a 9 point Likert scale) of each other and range from a lowest mean rating of $M = 6.96$, $SD=1.87$ (for non-user's mean perceptions along the Information Control dimension) to a highest mean of $M = 7.61$, $SD=1.32$ (for weekly user's assessments along the Library as place dimension). Figures 1-4 display the range of results by user group for each service dimension using box plots and illustrate the largely similar range of responses for each user group.

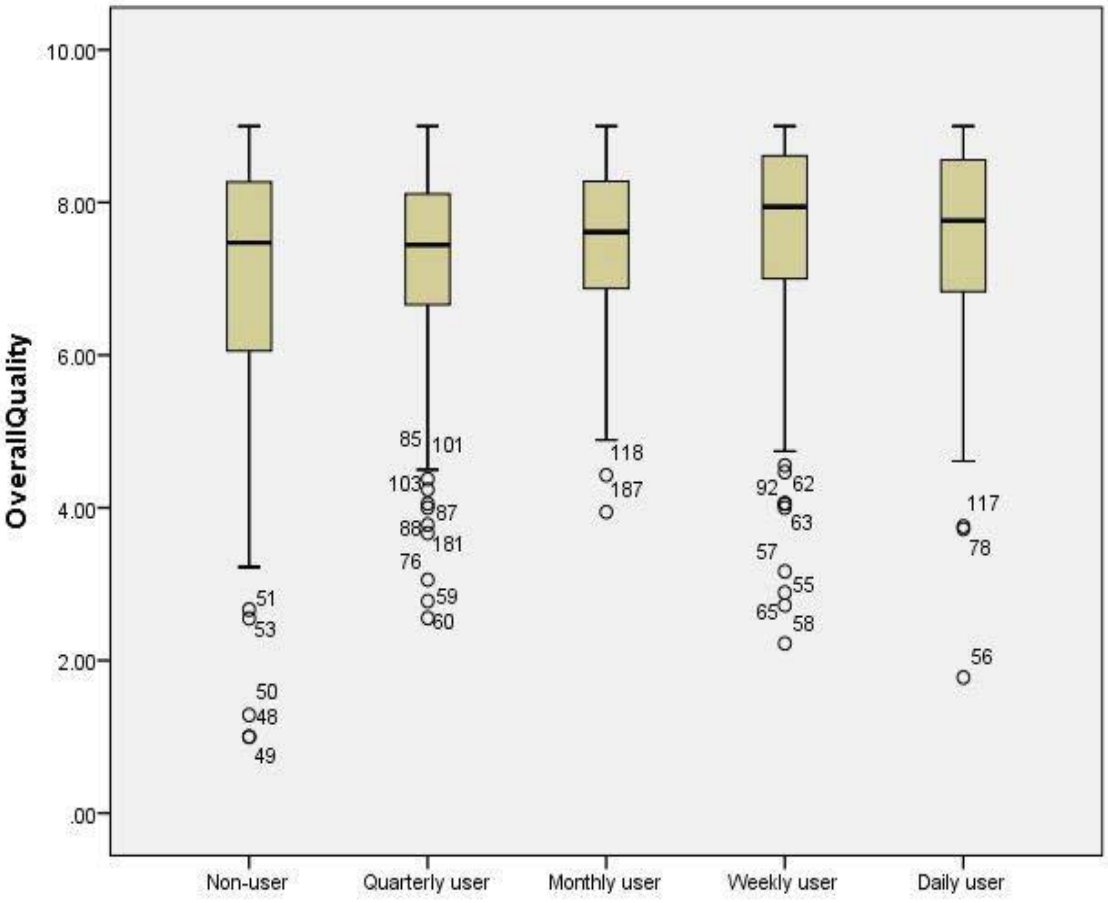

Figure 1. Box plot of responses to all LibQUAL+ items by user group.

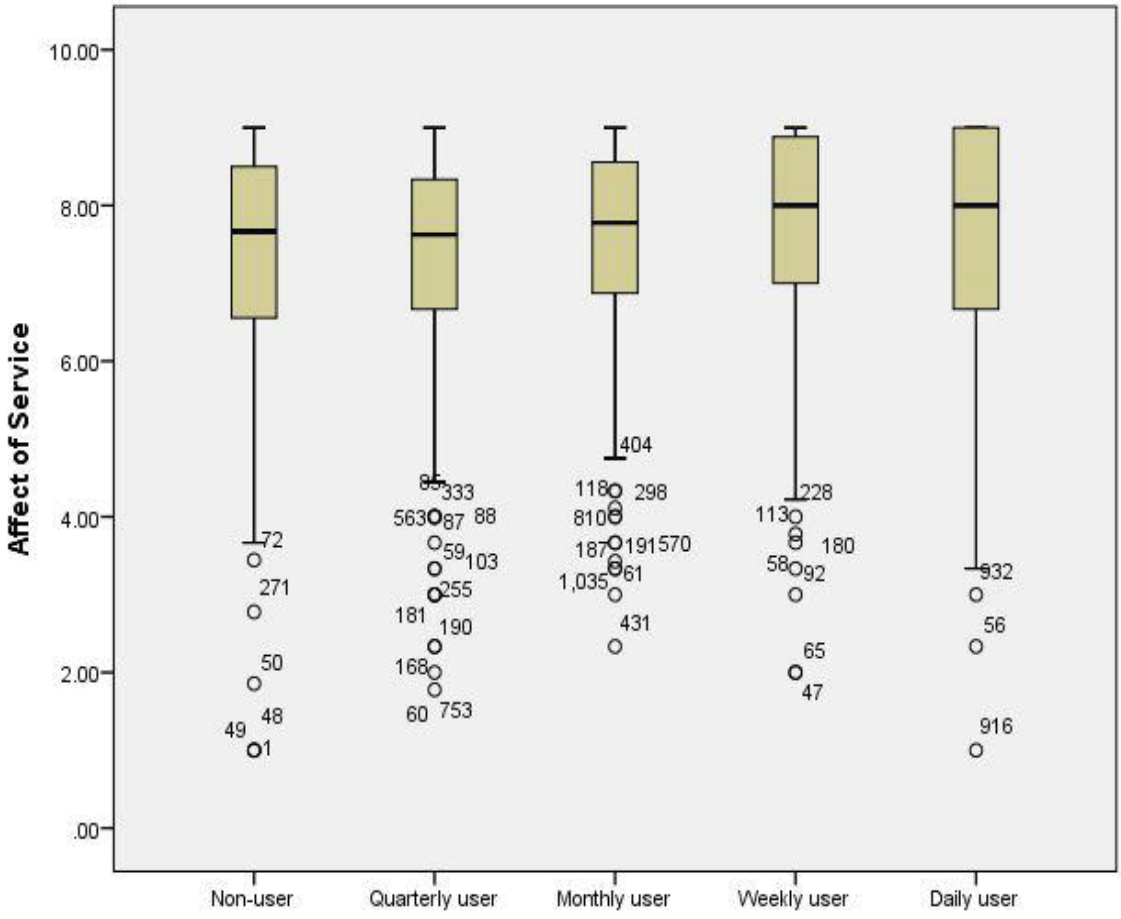

Figure 2. Box plot of responses to all LibQUAL+ 'Affect of Service' items by user group.

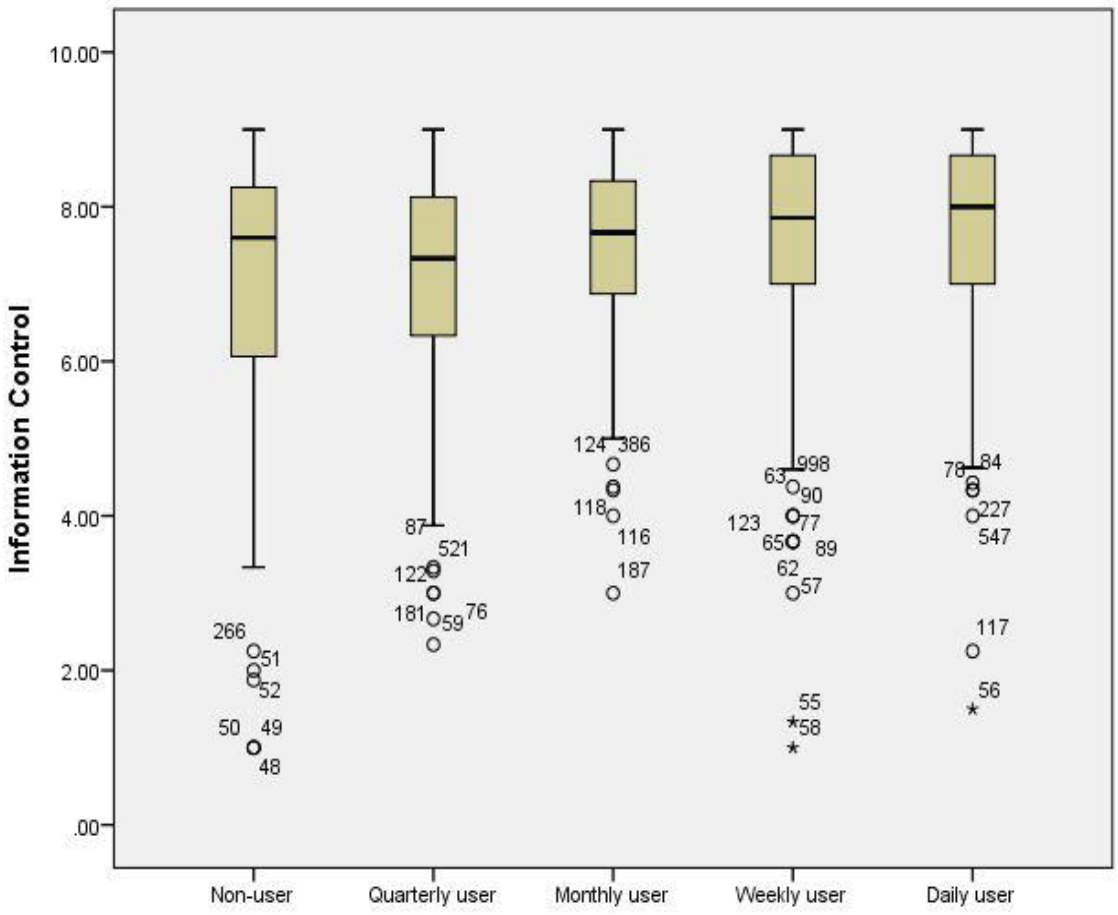

Figure 3. Box plot of responses to all LibQUAL+ 'Information Control' items by user group.

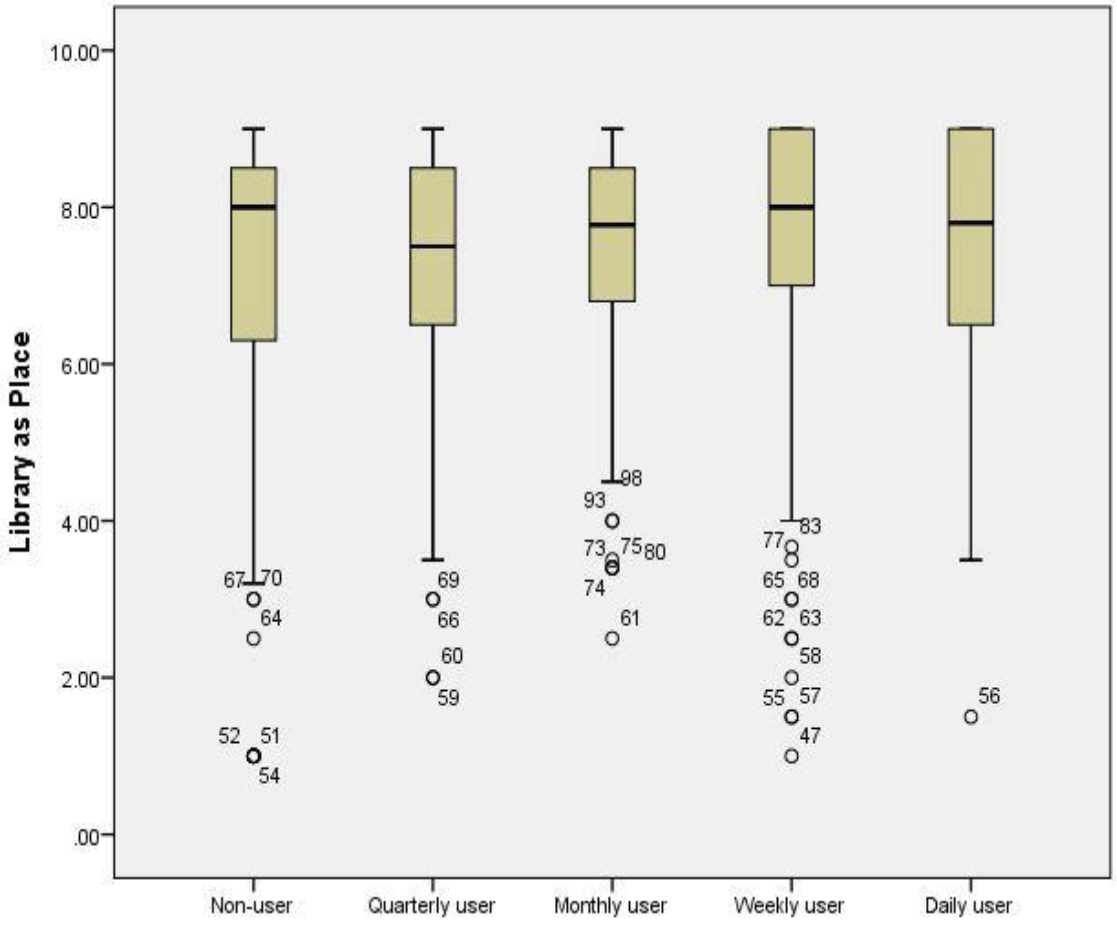

Figure 4. Box plot of responses to all LibQUAL+ 'Library as Place' items by user group.

Although responses are largely positive and largely similar, the non-user group does report lower mean perceptions of library services than more frequent users on every dimension and items overall. Generally, more frequent user groups have more positive mean perceptions than less frequent user groups, except for daily users who actually have more negative mean perceptions than weekly users. Weekly users have the most positive mean perceptions of library services overall and in every dimension.

Notable Findings about the Non-User Group

Descriptive statistics also reveal two unique findings about the perceptions of non-users: (1) On average non-users rate librarians and library employees more highly than library services or library collections and (2) non-users have more diverse opinions about service quality than more frequent users across all three LibQUAL+ dimensions.

Non-users have more positive mean perceptions of library staff (i.e. the "Affect of Service") dimension, $\overline{x}$ = 7.2018) than they do of library collections (i.e. "Information Control" dimension, $\overline{x}$ = 6.9594) or library facilities (i.e. "Library as Place" dimension, ($\overline{x}$ = 6.9312). This finding contrasts with the perceptions of respondents overall which have largely similar mean scores across the three dimensions: “Affect of Service” all respondents $\overline{x}$ = 7.4758, “Information Control” all respondents = 7.4307, “Library as Place” $\overline{x}$ = 7.4756. Figures 2-5 compare the mean perceptions of the non-user group and with other user groups for each of the three LibQUAL+ dimensions and for all LibQUAL+ items.

Secondly, the respondents in the non-user group report a broader range of perceptions of library services than other user groups across all three dimensions as well as items overall. This broader range of opinions is especially notable for ‘Library as Place’ dimension. For the ‘Library as Place’ dimension, the standard deviation of the non-user group is s=2.15737 compared with a standard deviation of s=1.52530 along the ‘Library as Place’ dimension for respondents overall. The other two dimensions see similarly larger standard deviations for the non-user group but to a lesser extent: ‘Affect of Service’ non-user s=1.75045, all users s=1.43775, ‘Information Control’ non-users s=1.87162, all respondents s=1.39642/.

Tests of Assumptions of the 3 x 5 Mixed Design ANOVA

Prior to conducting the primary 3 x 5 mixed design ANOVA used in this study, several analyses were run to test the statistical assumptions made by multivariate analysis. The results are described in this section.

Levene's Test of Equality of Error Variances. Table 2 displays the results of Levene's test of the Equality of error variances. This analysis tests whether the error variances in different groups are equal by comparing the absolute value of the difference between each score and the mean of its group. A significant result in Levene's test indicates that the error variances are significantly different and therefore the assumption of equality of error variances has been violated. A positive result in Levene's test is not uncommon for large sample sizes, like the one in this study, for which small differences in group variances can produce a significant Levene's test (Field, 2013).

The results of Levene's test in this study were significant for all dimensions of library service quality: Affect of Service $F(4, 1234) = 5.192$, $p < .001$, Information Control dimension, $F(4, 1234) = 7.340$, $p < .001$ and Library as Place dimension, $F(4, 1234) = 8.769$, $p < .001$. These results suggest that the assumption of the Equality of Error Variances has been violated. Table 2 summarizes these findings of Levene's test.

Table 2

Levene's Test of Equality of Error Variances

Dimension	*F*	*df1*	*df2*	*Sig.*
Affect of Service	5.192	4	1234	.000
Information Control	7.340	4	1234	.000
Library as Place	8.769	4	1234	.000

Although the significant results of Levene's test suggest that the assumption of Equality of Error Variance has been violated, Field (2013) notes that there are good reasons to temper the results of Levene's test, especially with large sample sizes like those in this study (n = 1286) in which Levine's test can be significant even when group variances are not very different.

Box's Test of Equality of Covariance Matrices. Table 3 shows the results of Box's Test of the Equality of Covariance Matrices. The homogeneity of covariance matrices is an assumption for multivariate test such as mixed-design ANOVA and an extension of the homogeneity variance used for univariate analyses. Like equality of error variance, it assumes the variance of each dependent variable are the same across groups. In addition, the assumption of homogeneity of covariance matrices also assumes that relationships between dependent variables is roughly equal. Box's test checks the assumption of the homogeneity of covariance matrices, an assumption for multivariate tests such as a mixed-design ANOVA. If the matrices are roughly the same, Box's test should return a non-significant result. The results of Box's test in this case, M=146.870, F(24, 1142403.426) =6.080, $p < .001$, suggest that the assumption the homogeneity of covariance matrices was not met in this data.

Table 3

Box's Test of Equality of Covariance Matrices

Box's Test	
Box's M	146.870
F	6.080
df1	24
df2	142403.426
Sig.	.000

Like Levine's test, Box's test is susceptible to spurious significance even when covariance matrices are relatively similar when sample sizes are large. Further, the effect of violating the assumption of equality of covariance is unclear and researchers tend to disregard the result of Box's test when group sizes are relatively equal. However, when group sizes are significantly different, then the robustness of the multivariate analysis cannot be assumed. In these data the size of the non-user (n=142), quarterly user (n=255), monthly user (n=279), and daily user (n=175) groups are largely similar, but the size of the weekly user group is significantly larger than the others (n=435). The size of each usage group is included in Table 4**.** Figure 6 displays the size of each usage group as a proportion of total respondents.

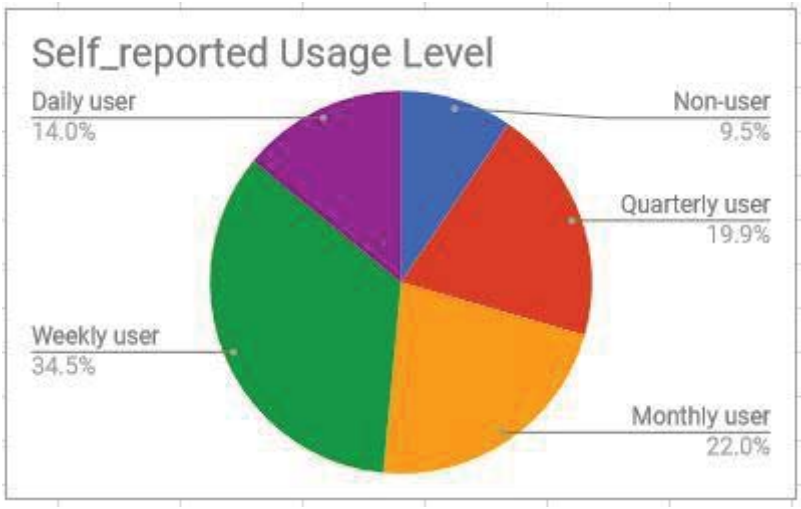

Figure 5. Percent of Respondents by self-reported usage level.

Mauchly's Test of Sphericity. The results of Mauchly's Test of Sphericity are reported in Table 4**.** Mauchly's test is a test of the assumption of sphericity, the assumption that the variances of the difference between data taken from the same respondent are equal. Mauchly's test is significant when the assumption of sphericity has not been met. In this study, Mauchly's test indicated that the assumption of sphericity had been violated ($\chi 2(2)$

= 50.289, p < .001), therefore degrees of freedom were corrected using Huynh-Feldt estimates of sphericity (ε = 0.962). Violation of the assumption of sphericity can negatively impact both the power and Type I error rate for certain kinds of post-hoc tests, specifically Tukey's test (Field, 2012). However, in order to correct for the violation of the sphericity assumption, the Huynh-Feldt correction adjusts the degrees of freedom appropriately. Huynh-Feldt results are reported in this study in Table 7.

Table 4

Mauchly's Test of Sphericity

Within subjects Effect	Mauchly's W	$\chi 2$	df	P	Huynh-Feldt
Service dimension	.960	50.289	2	.000	.966

Research Question 2

The second research question in this study was: Is there any significant difference in overall perceptions of service quality among non-users and more frequent users overall?

This study found significant differences in perceptions of community college library services between non-users and three user groups: daily users, weekly users, monthly users. Bonferroni post-hoc tests indicate that non-users have lower perceptions of library services than these three groups and perceive library services about a half-point (on a 9 point scale) lower than daily, weekly, or monthly users. The significance levels of these post-hoc tests were adjusted to account for the multiple pairwise comparisons. The difference in perceptions between non-users and weekly users is both greatest in degree and the most statistically robust. In contrast, this study found no significant difference in perceptions between non-users and quarterly users. This research questions is broken down into five hypotheses (H1-H5) each of which is explored granularly in turn below.

H1 - Non-Users and All Other User Groups

H1 predicts that there is no significant difference in overall perceptions of service quality between non-users and all groups of daily, weekly, monthly and quarterly users combined together. This hypothesis was not supported by the results of this study, which indicate a significant difference in perceptions between all user groups, however the effect size is vanishingly small. Just 2% of the difference in perceptions of service quality in the sample can be explained by differences in perceptions between the usage level groups. The test of between subjects effects found was significant at the $p < .001$ level: $F(4) = 6.909$, $p = .000$, partial $\eta^2 = .022$. More granular comparisons of the non-user groups with other user groups as well as the direction and magnitude of these differences is explored in the discussion of H2 - H5 below.

H2 - Non-users and Daily Users

H2 predicts that there is no significant difference in overall perceptions of service quality between non-users and daily users. This hypothesis is not supported by the findings of this study which indicate a significant difference in perceptions of library services between the non-user and daily user group: $t(1234) = .479/.153 = 3.130$, $p = .002$. Pearson's *r* was used to calculate the effect size which was found to be small using Cohen's (1998) thresholds: $r = .152$. Follow-on post-hoc tests also indicate the non-users have, on average, a -0.4789 point (on a nine point scale) more less positive perceptions of library services than daily users at $p < .05$ ($p = .018$). Full results of follow-on comparisons are included in Table 5.

H3 - Non-users and Weekly Users

H2 predicts that there is no significant difference in overall perceptions of service quality between non-users and weekly users. This hypothesis is also not supported by the findings of this study which indicate a significant difference in perceptions of library services between the non-user and daily user group: t(1234) = .617/.134 = 4.604, p = .000. Pearson's *r* was used to calculate the effect size which was found to be small using Cohen's (1998) thresholds: *r = .198.* Follow-on post-hoc tests also indicate the non-users have, on average, a -0.6175 point (on a nine-point scale) less positive perceptions of library services than daily users at p < .001 (p = .000). Full results of follow-on comparisons are included in Table 5.

H4 - Non-users and Monthly Users

H2 predicts that there is no significant difference in overall perceptions of service quality between non-users and monthly users. This hypothesis is also not supported by the findings of this study which indicate a significant difference in perceptions of library services between the non-user and daily user group: t(1234) = .455/.141 = 3.227, p = .001. Pearson's *r* was used to calculate the effect size which was found to be small using Cohen's (1998) thresholds: *r = .089.* Follow-on post-hoc tests also indicate the non-users have, on average, a -0.4552 point (on a nine-point scale) less positive perceptions of library services than daily users at p < .05 (p = .013). Full results of follow-on comparisons are included in Table 5.

Table 5

Mean difference and effect size comparison of non-user group with other user groups

Comparison Group	*MD*	*SE*	*P*	*r*
Quarterly user	0.2485	0.14367	0.839	0.0805
Monthly user	.4552*	0.14144	0.013	0.0839*
Weekly user	.6175**	0.13352	0.000	0.1978**
Daily user	.4789*	0.15310	0.018	0.1369*

Note. Mean difference is the mean of the non-user group subtracted from the mean of the comparison group.
*p < .05, **p<.001

H5 - Non-users and Quarterly Users

H2 predicts that there is no significant difference in overall perceptions of service quality between non-users and quarterly users. This hypothesis was supported by the results of the analysis which show no significant difference in perceptions between the non-user and quarterly user groups: t(1234) = .249/.144 = 1.729, p = .084. Because this study found no significant difference in perceptions between the non-user and quarterly user group post-hoc tests of direction, degree, and effect size are not reported.

Research Question 3

The third research question in this study explores service quality dimensions and asks: Is there any significant difference in perceptions of library service quality among the three LibQUAL+ dimensions? H6 predicts no significant difference in perceptions of library service quality among the three LibQUAL+ dimensions of service quality: (a) Affect of Service, (b) Information Control, and (c) Library as Place. This hypothesis was supported by the data analysis, which found no within-subjects effects between the service dimensions: $F(1.923, 2373.156) = 1.514$, $p = 0.221$; Wilk's $\Lambda = 0.997$, partial $\eta^2 = 0.003$. As discussed above, Huynh-Feldt corrections were performed to correct for the violation of the assumption of sphericity. Tables 6 and 7 **s**how the outcome of the tests of within subjects effects for both the dimensions and the interaction effects between the dimensions and usage level.

Table 6
Multivariate tests of significant differences between the LibQUAL service dimensions (RQ3, H6) and the interaction effects between the service dimensions and usage levels (RQ4, H7).

Effect	Value	F	P	η^2
Service Dimension				
Wilks' **λ**	.997	1.690	.185	.003
Service Dimension vs. Usage Level				
Wilks' **λ**	.990	1.624	.113	.005

Table 7
Tests of within subject effects for significant differences between the LibQUAL service dimensions (RQ3, H6) and the interaction effects between the service dimensions and usage levels (RQ4, H7).

Source	Type III SS	F	P	η^2
Service Dimension				
Huynh-Feldt	1.971	1.514	.221	.001
Service Dimension vs. Usage Level				
Huynh-Feldt	.8.456	1.624	.116	.001

Note. Because the assumption of sphericity was violated, Huynh-Feldt corrections provide more robust results.

Research Question 4

The fourth and final research question in this study is: is there an interaction effect between users and non-users among the three LibQUAL+ dimensions of library service? H7 predicts that there is no interaction effect between usage level and the LibQUAL+ dimensions of library service quality: (a) Affect of Service, (b) Information Control, and (c) Library as Place. This hypothesis was supported by the data analysis, which found no within-subjects interaction effects between the service dimensions and the five usage level groups: $F(7.693, 2373.156) = 1.624$, $p = 0.116$; Wilk's $\Lambda = 0.990$, partial $\eta^2 = 0.005$. As discussed above, Huynh-Feldt corrections were performed to correct for the

violation of the assumption of sphericity. Tables 6 and 7 **s**how the outcome of the tests of within subjects effects for both the dimensions and the interaction effects Figure 6 plots the estimated marginal means of each service dimension for each usage group and illustrates the lack of interaction effects.

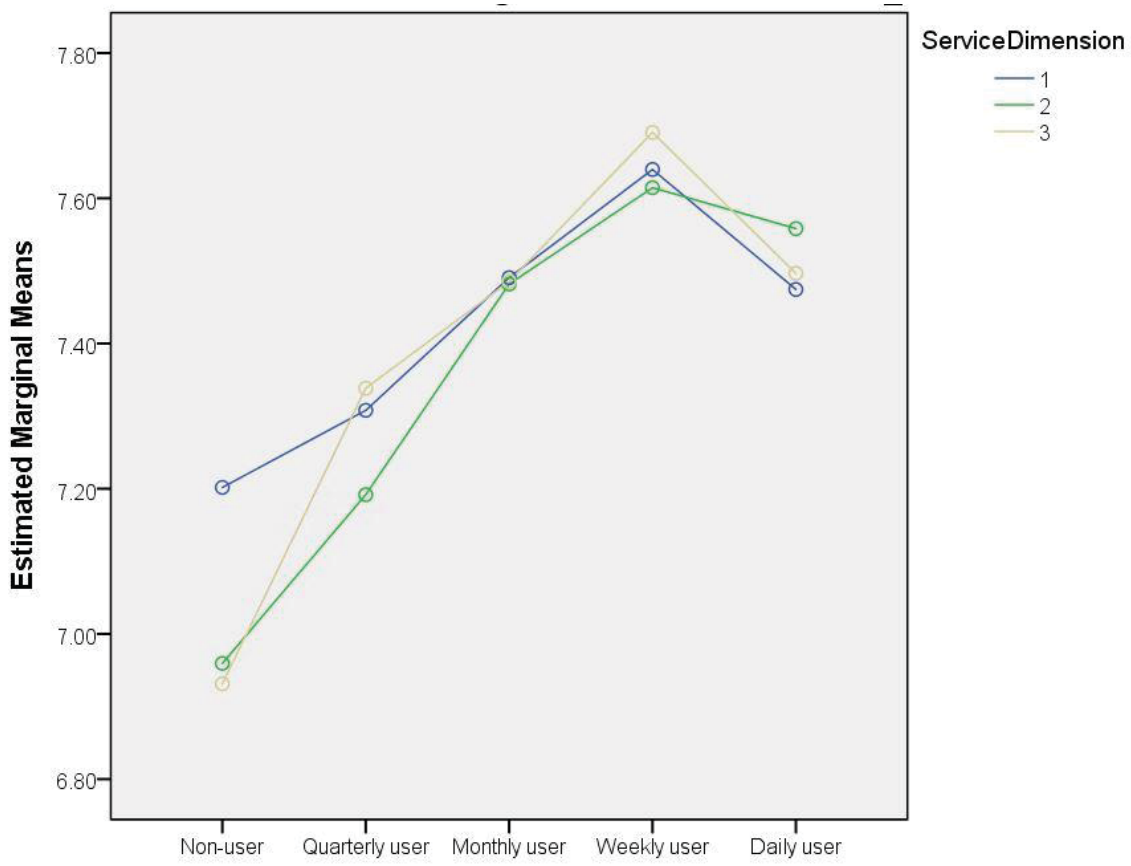

Figure 6. Estimated marginal means for each usage group for each service dimension. Illustrates the lack of interaction effects. Service dimension 1 is 'Affect of Service. Service dimension 2 is 'Information Control'. Service dimension 3 is 'Library as Place'.

Chapter Summary

This chapter reviews the results of the statistical analyses used in this study. Two tests of the assumptions for multivariate analysis were conducted. Levene's Test of

Equality of Error Variances, Box's Test of Equality of Covariance Matrices, and Mauchly's Test of Sphericity all returned significant results indicating that these data violate some of the assumptions for multivariate statistics. However, this is not uncommon and there are reasons to proceed with analysis despite these findings (Field, 2013). The chapter then provides a summary of the perceptions of community college libraries among non-users and reports that perceptions tend to be high (i.e. above seven on a nine-point scale) but also diverse. Each of the five hypotheses under RQ2 are then explored in turn. In general, perceptions of service quality among non-users were largely positive and largely similar to those of more frequent user groups. The null hypotheses in H1, H2, H3, and H4 were all rejected by the analysis and indicate non-user perceptions are statistically significant from those of non-user groups. However, follow up tests of direction and degree indicate that all effect sizes are small and clinically insignificant. The differences in mean perceptions tend to be a half-point or less. H5 was supported by the data and indicates no significant difference in perceptions among non-users and quarterly users. H6 was similarly supported by the analysis and found no significant difference between the three LibQUAL+ dimensions. Finally, H7 was also supported by the data indicating no interaction effects between usage level and the LibQUAL+ dimensions.

Chapter 5: Discussion

This chapter presents the findings of this study in terms of the conceptual frameworks and existing literature laid out in chapter three. Each research question and hypothesis is discussed in turn as well as notable additional findings from the study. The chapter begins by discussing implications of the descriptive findings about non-users and their perceptions of service quality and then turns to the findings based on the comparison of the non-user group with all other users. After this, the study explores four pairwise comparisons of the non-user group with daily, weekly, monthly and quarterly users in turn. The chapter then briefly explores these findings in light of the three LibQUAL+ dimensions of service quality, Affect of Service, Information Control, and Library as Place, and explores the findings related to interaction effects. Next, the chapter explores the implications of the results for signaling theory, stakeholder theory, and Revealed Preference theory, three of the theoretical models introduced in chapter three. It then discusses future directions and implications for the study for LIS researches before turning finally to potential recommendations for practicing community college library leaders.

Research Question 1

The first research question in this study seeks basic information about the perceptions of academic library service quality among non-users:

> **RQ1:** What are the levels perception of academic library service quality, as measured using the LibQUAL+ survey tool at a large Midwestern

community college, among those who never use library services (i.e., 'non-users)?

As documented extensively in the literature review, for both practical and paradigmatic reasons non-users have largely been ignored by the research literature in a gap that has been noted by scholars for the last several decades (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994). Research question one attempts to begin to fill this gap by providing basic, foundational information about the perceptions of academic libraries among self-reported non-users.

A first, and perhaps most notable, finding from this study is that non-user perceptions of academic library services are, on average, largely positive and largely similar to those of other more frequent users. The non-user group, on average, rated library services overall (as measured by the aggregate score on all LibQUAL items) as M=7.0308 out of 9. This was less than a half point different than the overall all-respondent, all-item average of M=7.4607 and just 0.6175 points lower than the highest user group (weekly users). As discussed below, this finding is somewhat at odds with both a Revealed Preference account of the link between usage and perceptions as well as the user/usage emphasis within LIS and library practice. Not being a user of the library does not necessarily indicate that these individuals perceive it negatively, or much more negatively than more frequent users.

A second notable finding about the perceptions of service quality of non-users is that they are much more diverse than those of more frequent users, especially about library facilities. Across all items, non-user responses had the highest standard deviation

of any of the highest user groups (SD=1.77675). This figure is almost a half point higher than both respondents overall (SD=1.29603) and the user group with the second most varied opinions, daily users (SD=1.31159). It was also significantly higher than that of monthly users who had the highest level of agreement (SD = 1.09660). Non-users' opinions of library facilities (i.e. the 'Library as Place' dimension) were particularly split (SD=2.11122) but they shared much agreement about employees (i.e. 'Affect of Service') (SD=1.74929) and library collections (i.e. 'Information Control') (SD=1.78233). Given that mean scores for all user groups are largely similar, these standard deviations indicate that non-users are more likely than more frequent users to rate the library much higher or much lower than average. Those who have used the library could be much more likely to agree on their ratings because they have first-hand experience. These results suggest that even if using the library does not make individuals much more likely to perceive it positively, it does make them more likely to agree with others about its service quality.

Research Question 2

While research question one merely asks for descriptions of the perceptions of community college library service quality among self-reported non-users, research question two asks for comparisons of those perceptions with those who report using community college libraries more frequently (i.e. quarterly, monthly, weekly, and daily users).

> **RQ2**: Is there any significant difference in overall perceptions of service quality among non-users and more frequent users overall?

Specifically, research question two is broken down into several granular hypotheses comparing every other user group with the non-user group. In this section, the implications of the results for each of these hypotheses will be discussed in turn:

H1: There is no significant difference in overall perceptions of service quality between non-users and *all groups of daily, weekly, monthly and quarterly users combined together*.

As discussed in the previous chapter, this hypothesis was not supported by the results of this study, which indicate a significant difference in perceptions between all user groups. The test of between subjects effects found was significant at the $p < .001$ level: $F(4) = 6.909$, $p < .001$, partial $\eta^2 = .022$. However, just 2% of the difference in perceptions of service quality was explained by difference in perceptions between the five user groups. The vast majority (98%) of differences in perceptions of service quality are explained by factors unrelated to frequency of usage. If interpreted using the signaling framework, these results indicate that perceptions of community college library services are not exclusively the result of signaling and that usage levels are associated with different levels of perceived service quality, but the effect of frequency of usage on perceptions is vanishingly small ($\eta^2 = .022$). Notably, the results for this hypothesis tell us only whether usage levels and perception levels are statistically linked. They do not tell us which factor is influencing the other. It may either be the case that using the library more frequently raises your perceptions of it (until you become a daily user, as discussed below) or it may be that those that positively perceive the library are more likely to visit it frequently. A notable caveat for the interpretation of these findings is that although there is a statistically significant difference between non-user groups and the four other

more frequent user groups, the effect size is very small. The results indicate that there is less than a half-point (on a 9-point scale) of difference between the non-user groups and respondents overall. This is not uncommon for a study like this one with significant statistical power. Because of the large amount of data available for analysis in this study (n=1,286), very small effects were detectable as statistically significant.

The small though statistically significant difference between non-user perceptions and the perceptions of other more-frequent user groups is notable from an LIS researcher perspective because it provides additional insight into the perceptions of non-user groups, an understudied population **(**Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994) especially at the community college level **(**Zeit, 2014; Hill, Best, & Dalessio, 2012; Fry, 2009; Groce, 2008; Reed 2015; Leeder, 2013**).** Future studies could explore the causes of this small difference in perceptions, whether it is detectable using measures of perceptions other than LibQUAL+ or how it compares in other types of libraries beyond community colleges including research-focused academic libraries such as graduate or specialty libraries, or libraries focused on the public and under-served populations such as public libraries, children's libraries, or library job-centers. Community college libraries have a dual role within their service areas and support both the research and teaching of their college (i.e. institutional service) as well as serving the local needs of the non-student general public (i.e. public service) (Fry, 2009). Given existing research indicating that services seen as public goods enjoy higher levels of support than those seen as private goods (Ledyard, 1994), comparing the size of the gap in perceptions between non-users and more frequent users within community college libraries to the size of the gap

between non-user and more frequent users within libraries with an exclusively public service role or exclusively institutional service role may provide fruitful insight into the extent to which different types of libraries are perceived as public goods. It may be the case, for example, that libraries at research focused institutions, such as graduate schools or medical centers, may display a wider gap in perceptions between non-users and more frequent users within the service population. Conversely, libraries that are seen as a public service, such as public libraries or children's libraries, may have a smaller gap in perceptions between non-users and more frequent users and thus may be similar to the support patterns seen in other public services favored by users and non-users alike such as transit (Manville & Cummins, 2015**)** or gyms (DellaVigna & Malmendier, 2006).

In contrast with the interesting implications of these results to the LIS researcher community, the small though statistically significant difference between non-user and more frequent user groups may have less impact on the practicing LIS professionals because the small effect size may be of little clinical significance. A concept originating in the field of clinical psychology, Jacobson, Follette, and Revenstorf (1984) define clinical significance as the practical importance of a given statistically significant treatment effect. An inherently somewhat subjective measure once operationalized (Jacobson & Truax, 1991), clinical significance is the extent to which a given statistical difference is perceivable, important, and actionable in practice. Given the small statistical effect size of these results as well as the relatively insignificant mean difference (less than a half point on a nine point scale) between non-user groups and other more frequent user groups, the high perceptions of community college service quality reported by all user groups (for all groups $M > 7.0$ out of 9), and the challenges practicing information

professionals face in taking action based on granular use of their data (Koufogiannakis, 2015), it seems unlikely that the small difference in perceptions between non-users and more frequent user groups is clinically significant. For example, if comparing the mean perceptions of each of the usage level groups, the results of this study imply that information professionals seeking to improve overall perceptions of service quality by recruiting non-users into the library can expect only very modest gains in reported perceptions and then only if they entice non-users, a notoriously difficult group to reach (Consonni, 2010; Sbaffi & Rowley, 2014), to make use of their libraries monthly, at the least. Importantly, this effect could indicate that perceptions about all libraries, including academic libraries which are very different from public libraries, are influenced by library experiences early in life, possibly when non-users were children. Getting non-users to visit a library once, or even once per season is not enough to realize the small bump in perceptions in community college service quality reported by library users over non-user groups. Despite these findings, usage and user metrics such as foot traffic, sessions and searches, space utilization, and user surveys are often among the key metrics reported to a campus administration to measure effectiveness. Further, self-reported data, such as that utilized in this study, may also be less important to university administrators who often prefer direct output measures to perceptions

H2: Non-Users vs. Daily-Users

H1 tests a prediction which compares the non-user group with all four more frequent user groups: daily, weekly, monthly, and quarterly users. The next four hypotheses under RQ2 compare the non-user group with each more frequent user group

individually. The implications, applications, and analysis of the results for each of these comparisons is described in turn in the four subsections below.

The first group specific comparison (H2) compares the non-user group with those who report using the library most frequently, daily users:

> **H2**: There is no significant difference in overall perceptions of service quality between non-users and *daily users*.

As reported at length in chapter four, the results of this study reject this hypothesis and indicate a small though statistically significant difference in perceptions between the non-user group and the daily user group: $t(1234) = .479/.153 = 3.130$, $p = .002$. Post-hoc tests confirmed that non-users have less positive perceptions of community college library service quality than daily users, but that this difference in perceptions is small: -0.4789 points (on a nine-point scale) $p < .05$ ($p = .018$). The size of a statistically significant difference is typically measured using one of three effect sizes: small, medium, and large. Cohen (1988) proposed widely used *r* value thresholds for these effect sizes. Although statistically significant, the *r* value in the non-user vs daily user comparison indicates only a small effect size. This matches with the results of all the pairwise comparisons of the non-user group and other more frequent user groups in this study, all of which found either no statistically significant difference or a statistically significant difference with a small effect size.

The results of the comparison between non-users and daily users throw usage into the sharpest relief because it compares the most frequent user group with the non-user group. The perceptions of those who report never setting foot in the library are compared with power-users who do so daily. In statistics, this type of highest versus lowest analysis

is often used to measure the largest possible effect the independent variable (here, frequency of usage) has on the dependent variable (here, perceptions of service quality) when the impact of the independent variable on the dependent variable is unidirectional (Field, 2013). Within the management literature, a similar comparison of highest and lowest usage groups is employed to calculate a 'Net Promoter Score' (NPS) which uses the ratio of frequent, passionate users to less frequent and non-users, ignoring those in the middle (Reichheld, 2003; Reichheld & Covey, 2006). This influential (Grisaffe, 2007) analysis is meant to measure a firm's potential for growth based on the explanation that frequent, power-users (i.e. "promoters") act as person-to-person advocates and thus drive new users. According to proponents of NPS within the management literature, the pro-growth work of promoters is unaffected by those with middling opinions of the organization, labeled "passives," and therefore their opinions are ignored. However, "detractors," infrequent users or those with a low opinion of the organization, limit the growth of an organization through the same means as promoters but in reverse: person-to-person warnings against the organization. Therefore, according to NPS, only the opinions of the highest and lowest usage groups are significant when analyzing an organization's growth potential (Keiningham, Aksoy, Cooil, Andreassen & Williams, 2008). Given these antecedents in the fields of Statistics and Management, the results of a direct comparison of the highest and lowest usage groups (as in H2) could measure both the highest level impact usage has on perceptions of service quality and the usage growth potential of community college libraries through person-to-person promotion.

As with the comparison of the non-user group with all other more frequent user groups from H1, the difference in perceptions of service quality between daily users and

non-users is statistically significant, but may not be clinically significant. The finding of a difference in perceptions of service quality between daily users and non-users is significant ($p=.002$) the more restrictive $p>.01$ level even if not at the $p>.001$ level. These results indicate the finding of a difference in perception levels is extremely unlikely to be due to chance or noise in the data. The follow-up tests measuring the directionality and magnitude of the difference were significant at the generally accepted $p>.05$ level. However, as should be expected for follow on tests like these that require more statistical power, these findings have somewhat less statistical certainty than the finding of a difference overall. Although, as indicated in Table 5, the p value of the magnitude and directionality of difference in perceptions with the non-user group is higher for the daily user group than for the other user groups compared in H3-H5, this is not surprising given that the daily user groups ($n =166$) and non-user groups ($n=119$) were the smallest of the five user groups and thus had less statistical power to uncover significant findings than the other pairwise comparisons.

Interpretation of the clinical significance of the effect size of the differences between non-users and daily users is perhaps uniquely interesting among the pairwise comparisons because, as discussed above, they represent the extremes of library engagement, as measured by self-reported usage. As with results overall the small difference in perceptions (just 0.4789 points on a nine-point scale) indicate that even very frequent usage of a community college library has little impact on perceptions of its service quality. Those who never use the library and those who use it daily have less than a half point of disagreement about the quality of its collections, staff, or facilities. In these data, the perceptions of power-users and non-users, while not identical, are largely the

same. Statistically, the effect size difference between them is small. As discussed above, this suggests a weak link between even frequent use of library services and perceptions of library service quality and belies a strict Revealed Preference interpretation of the relationship between usage of libraries and positive perceptions about them, even when comparing extremely engaged patrons with extremely disengaged patrons. If interpreted through the lense of NPS, these findings seem to indicate that daily users are not very much more likely to promote the library than non-users and non-users are no more likely to discourage new users than daily users are because both daily and non-users largely agree about the quality of library services. When compared with daily users, non-users do not seem to be detrimental 'detractors' and daily users look no more like growth-driving 'promoters' than even their non-user peers. These findings are in keeping with the paradoxical results from the LIS literature discussed in chapter two which find both high and growing levels of support for academic libraries (Association of Higher Education Facilities Officers, 2007; Chapman, 1998; Clotfelter, 2001; Hanssen & Solvoll, 2015; Lai, Siok, Yusof, & Kok, 2011; Reynolds, 2007) as well as low and declining measures of traditional usage (Allison, 2015; Applegate, 2008; Branscomb, 1940; Consonni, 2010; Goodall & Pattern, 2011; Kyrillidou, Morris & Roebuck, 2014; Mann, 1974; Mays, 1985; Soria, Fransen, & Nackerud, 2013; Thompson, Kyrillidou & Cook, 2007; University of Toronto Libraries, 2015). The results of this study provide further evidence of a weak link between individuals' usage and perceptions of academic libraries and complicate the use of Revealed Preference theory to explain this phenomenon.

However, there is reason to be skeptical of the implications of both the statistical technique of a high-usage group vs low usage group comparison as well as NPS analysis when interpreting the comparison of highly engaged daily users with disengaged non-users. Statistical comparisons of highest vs lowest groups only illustrate the maximum effect of an independent variable on a dependent variable when the effect of increasing the effect of the independent variable on the dependent variable is unidirectional (Field, 2013). That is to say, a high-vs-low group analysis only throws the effect of the independent variable into its sharpest relief when the high and low usage groups are also mathematical extremes (maximums or minimums) for the dependent variable. As discussed below, this is not the case in this study. Weekly users, not daily users, express the most positive perceptions of community college library service quality in these data, and thus is is the comparison of non-users with weekly users, rather than the highest use group (daily users) that provides the most contrast with the non-user group. Thus a classic high vs. low group statistical analysis may be of less value with these data. Similarly, some recent scholarship has cast doubt on the value of high vs low NPS analysis, especially for established, well known organizations. Keiningham, Cooil, Andreassen and Aksoy (2007) conducted an empirical comparison of NPS and the American Consumer Satisfaction Index for twenty-one firms as well as 15,500 interviews and found that NPS performed no better than other measures of consumer satisfaction in predicting firm growth. Grisaffe (2007) buttressed this empirical challenge with several conceptual critiques of NPS including the observation that NPS may be a less valuable measure for more established organizations, like libraries, that are already well known by both users and non-users alike. For well-known organizations such as community college

libraries it is unlikely that non-users who forgo libraries because they are unaware of their existence on campus. Thus, NPS analysis may be of less value.

Hypothesis 3: Non-Users vs Weekly Users

H3 compares the perceptions of community college service quality of non-users with those who report using the library weekly and predicts the null hypothesis:

> **H3**: There is no significant difference in overall perceptions of service quality between non-users and *weekly users*.

Chapter four reports the results of the statistical analysis at length, which rejected the null hypothesis in this case as well and found a statistically significant difference in perceptions of service quality between the non-user and weekly user groups: $t(1234) = .617/.134 = 4.604$, $p = .000$. Post-hoc tests measured the directionality and size of the difference in perceptions and also uncovered statistically significant results. Non-users were found to have a -0.6175 point (on a nine point scale) more negative perceptions of library services than daily users also at $p < .001$ ($p = .000$).

Although not a comparison of the minimum and maximum usage groups as in H2 above, the comparison of non-users and weekly users is notable for several other reasons. This comparison revealed the largest difference in perceptions as well as the most statistically significant of all of the pairwise comparisons (H2-H5). Perhaps the most notable of these findings is that the non-users and weekly users had the largest gap in overall perceptions of library services at 0.6175 points of difference on a nine point scale. Interestingly, this gap was actually larger than that in the comparison of non-users with highly engaged daily users, where there was a 0.4789 point difference between daily users and non-users. Contrary to the highest vs. lowest strategy often employed in

statistical analysis (Field, 2013), it is the comparison between the lowest group (non-users) and the high-middle group (weekly users) that throws the effect of usage on perceptions of service quality into highest relief. These results further underscore the perhaps counterintuitive finding in this data that non-users perceive the community college library to be of lower quality than weekly users. This result is among the most interesting in this study. It suggests that. If looking for 'promoters' to drive usage, community college library leaders should look to weekly users rather than daily users to get the word out. Further, the higher perceptions of service quality among weekly users than daily users suggests a complex, bidirectional link between how frequently a patron uses the library and how high quality they perceive it to be. Although non-users, occasional users, and frequent users alike all largely agree in their perceptions of library service quality, moving from never using the library to using it only quarterly has no effect on your perceptions, moving from quarterly to monthly raises your perceptions a small amount, moving from monthly to weekly improves your perceptions of service quality yet further, but moving from using the library once per week to daily decreases your perceptions of service quality overall. If looking to maximize the perceived quality of their libraries, these results indicate that community college library leaders should encourage patrons to visit their libraries weekly, but no more. Frequent users may be more critical, analyze services more closely, and hold the library to a higher standard. As discussed below, this finding could be further explored in future research to help reveal the causal link between frequent usage and perception of service quality. For example, if daily users are less satisfied with the quality of the library than weekly users, why do they return day after day? As these questions suggest, it is not simply the case, as suggested by

Revealed Preference theory, that those who like the library use it frequently and those that dislike the library do not. Both the finding of lower perceptions of service quality among daily users than weekly users and the finding of largely similar, positive perceptions of service quality for all user groups indicate that a more nuanced explanation for what drives both perceptions of service quality and usage levels is called for.

A second notable finding from the comparison of the perceptions of library service quality among the non-user and weekly user groups is that the difference was the largest, and it was also the most statistically significant in both the initial analysis as well as the post-hoc tests of directionality and magnitude. Both the initial and even the follow on test which requires more statistical power were significant at the $p>.001$ level. For each test $p=.000$ indicating very strongly that the findings were not due to chance or noise in the data. This indicates the findings from the comparison of the weekly and non-user groups are more statistically significant than all of the other findings in this study, which were only significant at the $p>.01$ level for initial analyses and $p>.05$ level for follow-on tests of directionality and degree. This means, interestingly, the largest findings in this study are also the most certain.

Although this higher level of statistical certainty is notable, it may be unsurprising given the relatively larger size of the weekly user group and corresponding increase in statistical power. The weekly user group was the largest user group by far ($n = 423$), comprising more than a third (34.73%) of respondents overall. The weekly user group was more than one and a half times larger than the quarterly ($n=270$) and monthly ($n=240$) user groups, two and a half times larger than the daily user group ($n=166$), and

three and a half times larger than the non-user group (n=119). Thus, any analysis of the weekly user group has significantly more statistical power to uncover significant findings than analyses of smaller groups. Nonetheless, even this comparative increase in statistical power could be offset by the effect size of the comparison of non-users and weekly users, the largest of any pairwise comparison. Given this fact, it remains notable that the pairwise comparison that revealed the largest difference in degree was also found with the highest level of statistical certainty. These notable findings about weekly, users could be of particular interest to LIS researchers who may wish to focus future research on frequent but not daily users, how their perceptions of service quality differ from both more frequent and less frequent users as well as why they perceive libraries so positively. As discussed above, the anomalous decline in perceived service quality as users move from weekly users of the library to daily users of the library also may be fruitful avenues for further research.

However, even if the gap in perceptions of service quality among weekly users and non-users is both larger and more statistically significant than any other comparison group or users overall, the clinical significance of the difference in weekly users' and non-users' perceptions could still be called into question. Even at its highest, the difference between non-users' perceptions of service quality and any other user-group is just 0.6175 points on a nine-point scale. The non-users rated service quality a 7.0308 on average on a nine point scale and weekly users (i.e. those with the most positive perceptions) rated the library 7.6483. Koufogiannakis (2015) and other LIS scholars have documented the difficulty practicing information professionals and library leaders have using their abundant data to make significant changes in library operations. Given this

fact, it seems unlikely that any management decisions would hinge on the difference between the lowest of the groups non-user rating of 7.0308 and the highest of the groups weekly user rating of 7.6483**.** Thus, arguably, even the pairwise comparison which yielded both the largest and most statistically significant difference is of little clinical significance. The majority of the stimulus causing both non-users and weekly users to rate community college library service quality at seven out of nine and higher seems not to be the quality of the library itself, for a non-user would have no experience of this, but instead unrelated factors such as signaling, reputation, or other factors.

H4: Non-users vs. Monthly Users

Like the two previous pairwise comparisons, H4 predicted the null hypothesis for analysis comparing the non-user group with the middle of the five user groups, monthly users:

> **H4**: There is no significant difference in overall perceptions of service quality between non-users and *monthly users*.

Similar to the comparisons with daily users and weekly users, this hypothesis was rejected by the analysis, which did uncover a statistically significant difference in the perceptions of non-users and monthly users, significant at the $p>.01$ level: $t(1234) = .455/.141 = 3.227$, $p = .001$. Because a significant difference was found, follow up tests were conducted to attempt to determine the direction and degree of the difference. These post-hoc tests yielded significant results at the $p>.05$ level, finding that non-users perceive library service quality 0.4552 points lower (on a nine point scale) than monthly users ($p = .013$). The size of the monthly group was moderate ($n=240$) as was the effect size (0.4522 points) and statistical significance ($p=.001$ for initial tests, $p= .013$ for post-

hoc tests). As with H1-H3, the results of this test were statistically significant but small and perhaps not clinically significant. In this way, the findings of the pairwise comparison of monthly users and non-users is unremarkable when contrasted with other pairwise comparisons (H2, H3, and H5) or non-users vs all user groups overall (H1). In fact, the results of the pairwise comparison of the non-users and monthly users are largely similar to those comparing the non-user group and all user groups overall. Perhaps the only notable result from the monthly user vs non-user comparison is that monthly users are the least frequent user group to have a statistically significant difference in perceptions than those of non-users. Visiting the academic library a single time, for example during a bibliographic instruction session or campus tour, has no measurable impact on perceptions of service quality in these data. Thus, infrequent users need to be enticed to visit the library more than one time to reinforce and improve their perceptions. Even visiting the library occasionally, once or twice per semester (i.e. quarterly) does not change the impressions about library services when compared with those of non-users. These results indicate patrons have to visit libraries with some frequency, at least monthly, or five times during a typical academic semester, for it to meaningfully impact their perceptions of the library's quality and then it does so only to a small extent (0.4552 points out of 9).

H5: Non-Users vs. Quarterly users

The final pairwise comparison in this study is between those who report never using the library and those who use it quarterly. As with the comparison above, the null hypothesis was proposed for this comparison:

> **H5**: There is no significant difference in overall perceptions of service quality between non-users and *quarterly users*.

Uniquely, this hypothesis was supported by the analysis which found no significant differences in the perceptions of community college library service quality between non-users and quarterly users: $t(1234) = .249/.144 = 1.729$, $p = .084$. While the differences between the perceptions of service quality of non-users and the other more frequent user groups was small and perhaps clinically insignificant, the gap in perceptions between non-users and quarterly users was also statistically insignificant. When it comes to their assessments of the service quality of the community college academic library, the ratings of those who never use the library and those who use it three times per year are identical. These results might be interpreted to indicate that quarterly users do not have frequent enough exposure to the library to gain the small boost in their perceptions of its quality that monthly, daily, and especially weekly users report. The lack of a significant result is not well explained by a lack of statistical power, the quarterly user group was the second largest user group within the results (n=270), larger than both the monthly (n=240) and daily (n=166) user groups, both of which yielded statistically significant results when compared with the non-user group.

One important implication of the findings for this hypothesis that further supports the interpretation that the results are not clinically significant is that non-users would

have to become much more frequent users of community college libraries for their perceptions of the library's quality to change at all. Because there is no statistically significant difference in perceptions of service quality between non-users and quarterly users, these results indicate that practicing information professionals or library leaders looking to improve perceptions of their services through specific initiatives targeted at recruiting non-users would have to entice them not merely into the quarterly user group but instead into the much more frequent monthly user group. Visiting the library only occasionally (i.e. quarterly) has no statistically significant impact on perception of service quality in comparison with never making use of the library. Only monthly and more frequent users report a statistically significant improvement in perceptions of service quality over non-users and then only to a very small extent. Research indicates that recruiting non-users to make use of the library even a single time requires a significant investment of resources (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994). Getting non-users to use the library not merely four times per year, but twelve times per year, and thus improving their perceptions of library services by less than a half-point, could be a difficult undertaking for quite a small payoff. These results also bring into question whether self-reported use is an effective measure of actual use. As libraries have further integrated into curricula, learning management systems, and web-browsers attribution of use to the academic library is much less clear. Students could be making use of library materials frequently without being aware of it.

Research Question 3: LibQUAL+ Dimensions

Research question three compares the three LibQUAL+ dimensions of service quality to test if there is any significant difference in the perceptions between them:

> **RQ3**: Is there any significant difference in perceptions of library service quality among the three LibQUAL+ dimensions: (a) Affect of Service, (b) Information Control, and (c) Library as Place?

As with each of the previous hypotheses, the null hypothesis was put forward for this question:

> **H6**: There is no significant difference between the 3 LibQUAL+ dimensions.

This hypothesis was supported by the analysis, which found no significant difference in perceptions between the three LibQUAL+ dimensions: $F(1.923, 2373.156) = 1.514$, $p = 0.221$; Wilk's $\Lambda = 0.997$, partial $\eta^2 = 0.003$. In this study, respondents' assessments of the library's service and staff (i.e. the 'Affect of Service' dimension), collections (i.e. 'Information Control' dimension) and facilities (ie. the 'Library as Place' dimension) were not statistically different. Ratings along each dimension were largely similar to rates along the other two. These results are are not surprising and are in keeping with the substantial existing literature on LibQUAL+ which report that the three dimensions of service quality are distinct constructs (Kieftenbeld & Natesan, 2013; Natesan & Aerts, 2016; Natesan, Ponce, Chavez, 2015; Thompson, Kyrillidou & Cook, 2009). Although largely unremarkable, because they match with those of previous studies, the findings for RQ3 do indicate that the data used in this study and the administration of the survey instrument were not substantially different than LibQUAL+

surveys administered on other campuses. While reassuring, this is unsurprising given the highly proscribed nature of LibQUAL+ survey administration and the rigorous testing the instrument has undergone to confirm its robustness and rigor **(**Lane, et al., 2013; Natesan, Ponce, Chavez, 2015; Natesan & Aerts, 2016**)**. Because this RQ3 has already been well explored in the existing literature, in this study the function of RQ3 was as a foundational assumption for the interaction affects explored in RQ4. If significant differences between the dimensions for all respondents had been found in these data, this would impact the interpretation of the results of RQ4. Because there was no significant difference between the LibQUAL+ dimensions for all respondents' overall, any interaction effects between the LibQUAL+ dimensions and the five usage levels can be attributed to the differences in how each of the usage groups responds differently to the survey items for each of the three LibQUAL+ dimensions.

Research Question 4: Interaction Effects

The fourth and final research question in this study explores the interaction effects between usage level and the three LibQUAL+ dimensions of service quality:

> **RQ4**: Is there an interaction effect between users and non-users among the three LibQUAL+ dimensions of library service?

Interaction effects occur between two independent variables when the effect of one of the variable changes based on the level of the other. For example, in this study, interaction effects would occur if the difference in perceptions between the user groups varied based on the LibQUAL+ dimension being measured or if differences between ratings on each LibQUAL+ dimensions varied based on whether data from daily users, weekly users,

monthly users, quarterly users or non-users was being analysed. As with each of the previous hypotheses, H7 predicts the null hypothesis:

> **H7**: There is no interaction effect between usage level and the dimensions of library service.

H7 was supported by the results which found no within-subjects interaction effects between the service dimensions and the five usage level groups: $F(7.693, 2373.156) = 1.624$, $p = 0.116$; Wilk's $\Lambda = 0.990$, partial $\eta^2 = 0.005$. There are two notable interpretations of this finding, one about the LibQUAL+ dimensions and one about the usage groups. The first is that there is no significant difference between the three LibQUAL+ dimensions, regardless of how frequently respondents' report using the library. Previous studies have confirmed the construct validity of the three LibQUAL+ dimensions (Kieftenbeld & Natesan, 2013; Natesan & Aerts, 2016; Natesan, Ponce, Chavez, 2015; Thompson, Kyrillidou & Cook, 2009). However, this study found no difference in the respondents' perceptions of each of the service quality dimensions whether they had abundant information about all aspects of the library from daily usage or no information about any of the library's services because they had never made use of it. Responses to all libqual items, for all user groups, were substantially the same. Although LibQUAL+ is a respected and established instrument which used item sampling to cull items down to the minimum number necessary for statistical rigor using large collections of data gathered from many campuses (Kyrillidou, 2010), these results either do not support the contention that the LibQUAL+ dimensions are conceptually distinct or indicate that the individual community college library at which these data were collected was balanced in the quality of its facilities, customer service, and collections.

The second notable finding from RQ4 pertains to the user groups themselves. Daily, weekly, monthly, quarterly, and non-user groups do not rate the library differently based on the dimension they are evaluating. If significant interaction effects had been found this could have meant, for example, that using the library frequently improves patrons' assessments of its collections but does not impact their assessments of its customer service or facilities, or vice versa. The support for the null hypothesis in this case indicate that the small gains in assessments of library service quality reported by monthly, daily and especially weekly users uniformly boost all three LibQUAL+ dimensions. There is not one dimension that is uniquely impacted by increased usage of the community college library. This finding is, in many ways, unremarkable. However, checking for interaction effects could have yielded anomalous results that might have led to fruitful further research. The results of this study suggest that further exploration of how non-user perceptions of specific aspects of library services differ from those of other more frequent users may not yield significant findings.

Dismissing alternate interpretations: what if perceptions drive usage

In general, this chapter has interpreted the results to this study to indicate that the frequency with which patrons visit the library has a small though detectable impact on how high quality patrons perceive the library to be. On average, those who use the library perceive it to be about a half-point (on a nine point scale) higher in quality than those who never use the library. The effect size of moving from non-usage even all the way to daily or weekly usage is small. These relatively modest gains in perceptions of service quality from increased usage are interpreted here to indicate that community college library leaders looking to improve perceptions of their libraries should not expect

profound improvements in perceptions even if they persuade a large number of non-users to make frequent use of the library. However, these results could be interpreted differently. It may be the case that rather than usage levels causing only small gains in perceptions, that the causal link runs the other direction and small differences in perceptions of community college service quality have a large impact on how frequently patrons make use of the library. Following this interpretation, implications of community college library leaders are largely the reverse of the interpretation used in this study. Rather than the differences in perceptions between non-users and other usage groups being of minimal clinical significance, small differences in perceptions of the service quality of libraries have large impacts on the frequency with which patrons use the library. For example, this interpretation implies that having a non-user improve their perception of a given library's service quality just .04552 points on a nine point scale will have them visiting the library monthly. Similarly, an additional fractional improvement in their perceptions, 0.4789 points above their non-user perception level, will cause them to visit the library daily. This interpretation implies that community college leaders should work to enhance the quality of their services, or potential patrons perceptions of their services, even if their efforts result in only small improvements in patrons perceptions, because even small increases in perceptions of service quality will dramatically impact their usage levels.

While compelling, there are several inconsistencies within the results that challenge this alternate interpretation. The first and most notable is the non-unidirectional link between usage level and perceptions. As noted above, daily users report lower perceptions of service quality than weekly users. This challenges interpretations of these

results based on the assumption that perceptions drive usage for two reasons. First, it implies that lowering a weekly users' perceptions of a library's service quality would increase the frequency with which they make use of the library to daily. Or, alternately, this interpretation implies that improving a daily users perceptions of a library's service quality would decrease the frequency with which they use the library to weekly. Both of these assertions seem unlikely and do not match with any theory of how usage and perceptions of quality are linked. A second notable anomaly in the data that challenges the alternate interpretation of the results is the lack of difference in perceptions between quarterly users and non-users. If perceptions drive usage and these results indicate no difference in perceptions between non-users and quarterly users, then this interpretation does not explain why some individuals use the library quarterly while some never use the library. If quarterly users and non-users do not have meaningfully different perceptions of service quality, it cannot be the case perceptions of service quality explain the difference in usage between these two groups.

Recommendations for Library Theory

Revealed Preference theory predicts perceptions and usage are linked and that people's tastes can be inferred from their choices (Samuelson, 1948). It argues that people use what they like and, therefore, usage is an appropriate proxy for positive perceptions and may even be a more accurate measure of preference than self-reported preferences (Adamowicz, Louviere, & Williams, 1994). For example, Revealed Preference theory implies that if patrons like libraries, then they will use libraries and, conversely, if patrons do not use libraries, then we can presume that they have more positive perceptions of other uses of their time. Revealed Preference theory has a great

deal of appeal and interpretive power for both LIS researchers, who have emphasized users for more than four decades (Dalrymple, 2001) and for library practitioners who, thanks to the vendors and digital systems they use, have a much easier time measuring usage (e.g. checkouts, visits, searches, ILLs etc.) than perceptions which require sampling and complicated and sometimes difficult to implement survey techniques (Baker & Read, 2008; Morris, 2016). Non-user perceptions are even more difficult to measure (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994) and therefore are often ignored by both practicing information professionals and LIS researchers.

These results, however, indicate that only a small part of individual's perceptions of community college libraries are driven by their usage. Non-users, by definition, have no experience with libraries and therefore their ratings of libraries must be based on signaling, or reputation, or other factors unrelated to their experience as users. In this study non-users rated the library a 7.0308 out of 9 overall, a rather high score, presumably totally due to factors unrelated to usage or directly experienced service quality. Further, if non-users and users' perceptions of libraries are largely similar, this might imply that a majority of users' motivations for rating libraries as they do are based on non-usage factors (signaling, reputation, etc.) rather than their actual experience using libraries. Non-users, in some sense, could be understood to provide a baseline or benchmark for perceptions of library services that is completely independent of the actual quality or user experience of a library overall. They represent, it might be argued, the default 'control group' rating of library services. In this study, non-users rate libraries 7.0308 out of 9 overall and more frequent users rate libraries 7.4607 overall. This seems

to indicate that using the library only slightly improves users' perceptions of the library, by about a half point out of nine. Instead, perception levels may be largely driven by other factors unrelated to usage or direct experience of service quality, for example, signaling value.

Perceptions of academic library service quality may have very little to do with both the actual quality of the service within a library and whether or not patrons choose to use the library. Instead, when both users and non-users state their perceptions of library service quality their responses are based on factors largely unrelated to the actual quality of library services. In addition, library leaders may find that rolling out new and better services has little impact on both perceptions of their library's service quality or the number and frequency of their users, possibly because perceptions about the quality of libraries is largely determined by early childhood experiences or depictions of libraries and therefore library's actual quality has less impact on their perceived quality.

Perhaps the most notable impact of these findings for library leaders facing declining usage is that usage levels alone do not tell the full story of who likes the library and would agree with statements included in the LibQUAL+ survey like "the library has material I need for my work" or "library employees understand the needs of their users." Instead, libraries are very positively perceived by user and non-users alike and, in some cases, very frequent users may have more negative impressions than less frequent users. This study suggests that library leaders hoping to numerically justify their place on campus, as libraries are increasingly called to do (Oakleaf, 2010), should focus not only on usage statistics but also on perceptions of libraries. These results suggest there are many who want libraries on their campus, whether they are library users or not.

A number of existing LIS theories used to types of usage, reasons for usage, and barriers to usage are also helpful for explaining why students who positively perceive the library do not use it. For example, Gross' (1995) Imposed Query theory establishes a framework for illlucidating the difference between authentic queries, those that originate from users themselves, and imposed queries, those users undertake because of an requirement or other artificial request. Using Gross' (1995) framework it may be that when responding to LibQUAL+ items such as "library employees understand the needs of their users" respondents are thinking only about their authentic user needs rather than the imposed queries, set by faculty and other sources, that actually drive them to use library services.

Satisficing (Simon, 1972) and Library Anxiety (Mellon, 1986) could also explain why high perceptions of the community college library do not necessarily indicate high usage levels. Library Anxiety theory (Mellon, 1986) notes that many individuals feel uncomfortable in library spaces and therefore may avoid them even if they perceive them to be of high quality. According to this theory, non-usage may be due not to low perceptions of a particular library's quality but because of anxiety about the use of libraries in general. Related LIS theories which explain information avoidance, including Information Overload and Barriers to Information Seeking (Edmunds & Morris, 2000), also helps explain why positive perceptions may not be enough to drive usage. Satisficing (Simon, 1972) states that facing information needs individuals do not seek out the best information, but instead stop at merely the first information that fills their need, regardless of its quality. Satisficing theory (Simon, 1972) would explain why those who perceive libraries highly do not use it more frequently by observing that academic

libraries provide rigorous, vetted information of the very highest quality, and this is simply not what most satisficing users will seek out. Instead, they go to more widely available but lower quality sources, because this is all they perceive themselves to need.

The results of this study seem to support an interpretation that, at least, some of the support libraries enjoy is due to signaling. Signaling theory predicts that an attribute, such as a library, can have value independent of its use that arises from the information the attribute signals to others (Spence, 2002). For example, in addition to its instrumental value for study and research, a campus library may also have value as a signal of both an institutions' resource base and its commitment to rigorous academics to prospective students, faculty recruits, alumni donors, accreditors, and other stakeholders whether they use the library or not. While this study only measures the impact of usage level on perceptions, it does indicate that only a small part of the high ratings of quality libraries enjoy are due to users' actual experience using the library as a community college student. These results indicate that the vast majority of the more than seven out of nine rating community college libraries enjoy was due to effects, like signaling, experienced by respondents whether they used the library or not. This is certainly the case for the high non-user ratings of the community college library's quality which could not be based on the percieved quality of the library and therefore must be explained by alternate explanations such as signaling or reputation, or some other non-usage based cause. Given signaling theory's diverse impact on fields such as management, evolutionary biology, economics, and sociology (Basdeo et al., 2006; Carter, 2006; Connelly, Certo, Ireland & Reutzel, 2011; Sundie et al., 2011; Veblen, 2007) the results in this study may be the

result of signaling, but future studies could identify other causes such as childhood experiences with libraries or depictions of libraries in popular culture.

These results also support a stakeholder theory interpretation. Stakeholder theory argues that organizations are accountable to a much broader group of individuals than merely their shareholders or, in the case of libraries, their users. Rather, organizations serve a broad coalition of groups including suppliers, creditors, customers, taxpayers, employees, managers, local citizens, and even society at large and must make management decisions that take the impacts on all of these groups into account (Freeman & Reed, 1983). In the community college library context, stakeholder theory could be applied to argue that campus libraries are accountable not just to patrons who use the library but also other members of the campus community and larger community, including non-users, on whom library management decisions could have impact. Further, community colleges, much like land-grant universities or other public intuitions, are publicly funded institutions embedded within specific locality and therefore must place outreach to the larger community as a priority. Stakeholder theory must be understood in the context of the institution's mission which the library serves. This study found that non-users' ratings of community college library quality were very positive and largely identical to those of users, even those of committed frequent users. In keeping with stakeholder theory, these findings suggest that even non-users, at least those who complete surveys, are bought in to and engaged with the quality of their community college libraries. These results also support the findings from elsewhere in the literature that libraries are well regarded by user groups and non-user groups alike (Association of Higher Education Facilities Officers, 2007; Chapman, 1998; Clotfelter, 2001; Hanssen &

Solvoll, 2015; Lai, Siok, Yusof, & Kok, 2011; Reynolds, 2007). Therefore, a broader approach to library management that takes the perspectives of non-user groups into account when making library decisions may be more in keeping with the diverse coalitions of users and non-users academic libraries serve.

Recommendations for LIS Research

As noted in the preceding chapters, this study helps to fill a longstanding gap in the literature related to non-users (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994). The findings in this study also suggest several future directions for follow on research to further explore non-users and their perceptions of community college service quality as well as several other related issues. A first notable future direction is to expand the study of non-users of community college libraries to other domains to see if the same results are found. Fortunately, this could likely be done with abundant existing data and widely available statistical software. The instrument used in this study has been administered by more than 1,200 libraries and is implemented at more than a hundred academic libraries each year (Association of Research Libraries, 2017). Any of these libraries with access to the software and expertise needed to conduct multivariate statistics could perform confirmatory studies to see if the results found in this study apply on their campus. More ambitiously, all the data collected in every LibQUAL+ administration ever conducted is housed in a single repository administered by the Association of Research Libraries (ARL). These abundant data drawn from multiple institutions across many years have been used by studies in the past (Thompson, Kyrillidou & Cook, 2007) and represent a unique opportunity to overcome the limitations of representativeness and generalizability

to different types of academic libraries while also providing very substantial statistical power with which to test hypotheses. Unfortunately, these data remain unavailable at present, but the results of this study indicate these archived LibQUAL+ data could be a powerful source for better understanding non-users because, unlike other sources of academic library data, they include responses from users and non-users alike.

A second future direction could be a more targeted study exploring non-users and the reasons they give for the ratings of service quality they provide. For example, the results of this study do not provide information about whether non-users who chose to respond to library surveys such as LibQUAL+ are representative of all non-users. This study used comparative analysis to juxtapose the perceptions of non-users with those of more frequent users. Future research could focus only on non-users and use qualitative as well as quantitative methods to better understand what ratings they provide of community college service quality and their reasons for doing so. However, as noted extensively in the scant literature on non-users (Brick, 1999; Consonni 2010; Flowers 1995; Klintoe, 1977; McCarthy, 1994; Sbaffi & Rowley, 2014; Slater, 1981; Sridhar, 1994), any such study would face the notable challenges in recruiting a substantial and representative sample of the non-user population.

Another future direction related to the study of non-users revealed by anomalies within these results is the differences in perceptions, if any, between those who never use libraries and those who use libraries very infrequently. This study found that while daily, monthly, and especially weekly users had statistically distinct perceptions of community college library service quality from non-users, there was no meaningful difference in the perceptions of quarterly users and non-users. This finding suggests that the threshold for

when usage begins to impact perceptions of quality and other factors lies somewhere between visiting the library between three and twelve times a year. Additional research, perhaps incorporating more granular information about the frequency of annual visits between three and twelve times, may provide fruitful insight into how frequently a given patron has to make use of the library to be considered a 'user.' Relatedly, future comparative research might hone in on the differences between non-users and infrequent users to attempt to uncover differences in their perceptions of library service, if any. The results of this study indicate that, at least when it comes to perceptions of service quality, non-users and quarterly users are largely the same. It seems unlikely that infrequent library users and non-users are identical in all other ways, and future studies could explore how they differ.

A final way to expand and further explore the results of this study would be to compare them with qualitative instruments and studies. As discussed in the limitations, this study used self-reported, quantitative data from an anonymous web-survey.

The results of this study also suggest two interesting future directions not related to non-users. The first of these could use alternate methods to explore what, rather than usage, causes individuals to rate libraries' service quality as they do. As discussed at length above, the results of this study indicate that the difference in the service quality ratings between users and non-user groups is largely clinically insignificant. This suggests that a majority of the ratings individuals give to library services are not due to their actual experiences of the library's quality but were instead responding to some other factor or benefit they receive or indicating something else unrelated to usage or their experience with libraries. Future studies could use novel designs to measure how

individuals rate services and buildings when they are presented as ‘libraries’ verses as other kinds of generic services as in a blind experimental study. Studies such as this could add to the body of evidence indicating that perhaps ratings of libraries are due as much to their reputational or signaling value as to their underlying quality overall.

The second future direction unrelated to non-users could explore the link between frequency of usage and perceptions of service quality, especially among very frequent users. One of the most interesting anomalies in these results is that daily users have lower average perceptions of community college library service quality than weekly users. This is in contrast with the other findings in this study which largely show that increased usage is linked with small though statistically significant increases in perceptions of service quality. Oddly, between weekly and daily users this is not the case. In fact, those who use the library daily report less satisfaction with its quality than those who come only once per week. Future research could target this anomaly to better understand why it occurs and what motivates the differences in usage patterns and perceptions among these two very frequent user groups. It may be, for example, that daily users are so highly engaged with library services that they are more likely to notice and object to specific gaps in service quality that those who visit the library less frequently are likely to overlook. Or, it may be the case that these daily users fall into a distinct demographic category, such as library employees or those engaged in daily research, that have unique perspectives on service quality that other groups do not share. Future research exploring differences in perceptions among these two very frequent user groups could be fruitful as well as relatively easy to conduct because these highly engaged groups would not be subject to the same recruitment roadblocks those studying non-users face.

Recommendations for Practicing Library Leaders

One of the goals of this study is to empower academic library leaders facing increasing challenges to demonstrate, and quantitatively document, their value on campus (ACRL, 2010; ALA, 2015; Marić, 2013). The results of this study have several implications for community college library leaders to help them both better demonstrate their value and better serve their stakeholder groups. The first and most notable of these follows from the finding that users and non-users alike report high ratings of the community college library scoring it at least a seven out of nine, whether they use it regularly or not. This demonstrates that libraries are valued by members of the campus community who do not regularly visit the library as well as those that do. The traditional usage and user focused model of libraries implies that libraries are only for users and usage and only user groups would be negatively impacted in closures or service reductions. The results of this study challenge this assumption. Non-users also perceive libraries positively and are clearly deriving something of value from libraries that causes them to rate them so highly, whether this is signaling or some other factor. Thus, in keeping with the principles of stakeholder theory and somewhat in opposition to the user focus of LIS, community college library leaders should consider the implications of their decisions not just on user groups, but also on non-user groups which also have a stake in library services. Further, the results of this study suggest that community college library leaders do their libraries a disservice by focusing primarily, and in some cases exclusively, on user data and usage metrics to demonstrate their impact and value. The results of this study indicate that other metrics, such as ratings of the library gathered from the user and non-user campus community, may provide a more complete and

compelling picture of the value of the library than usage measures alone, which, as documented in the literature, may be in decline (Allison, 2015; Applegate, 2008; Branscomb, 1940; Consonni, 2010; Goodall & Pattern, 2011; Kyrillidou, Morris & Roebuck, 2014; Mann, 1974; Mays, 1985; Soria, Fransen ,& Nackerud, 2013; Thompson, Kyrillidou & Cook, 2007; University of Toronto Libraries, 2015). If faced with declining usage and challenges from campus leaders about the continued place of the library on campus, the results of this study suggest library leaders could gather survey data, including from non-users, to illustrate the highly positive perceptions community college libraries enjoy. This broader picture of the value of libraries on campus, not only for use but also for signaling or other non-instrumental reasons, may help protect libraries from budget cuts or other resource restrictions as traditional usage declines.

In addition to encouraging library leaders to expand beyond usage metrics and consider the impacts on all stakeholder groups in their decisions, another important implication for practice from this study is the wider and more granular use by information professionals of all the data they collect. This study made use of archival LibQUAL+ data that was left unused and unanalyzed following an initial review of the pre-packaged report provided to libraries administering LibQUAL+. This study demonstrates by example that a great deal of useful, actionable results can be drawn from more serious statistical analysis of the data libraries are already collecting. Too frequently, libraries ignore the data repository that accompanies a LibQUAL+ administration when they could draw on it to make data-driven decisions that would improve both services and their understanding. This study illustrates some of the interesting findings that can arise from

the better use of data by information professionals. Library leader's challenge is to capture meaningful data, not just abundant outputs.

A final important implication from this study pertains to the link between usage level and perceptions of quality. The results of this study indicate that while higher usage levels are associated with higher assessments of library service quality, these increases in perceived service quality are small and arguably clinically insignificant. This finding implies that usage levels are a poor proxy for perceptions of service quality and vice versa. Thus, library leaders hoping to increase perceptions of service quality through increasing usage may be disappointed with the gains in perceptions of service quality even as individuals move from non-users to very frequent users. In this study, the largest mean gap in perceptions of service quality between users and non-users was just a half point on a nine-point scale. Further, this study found no increase in perceptions of service quality when non-users became quarterly users. Indeed, it is only when non-users become regular monthly users that they report any improved assessments of service quality and then only a half point of difference. The implications of all of these findings indicate that practicing library leaders looking to improve assessments of their quality: (a) may have a difficult time doing so because assessments are so uniformly positive already and (b) should not expect increased usage of the library to improve individuals' assessments of its quality.

Chapter Summary

This study found that both non-users' and users' perceptions of library services were largely similar and largely positive. All user groups, daily, weekly, monthly, and quarterly users, as well as non-users, rated the library, on average, above seven points on

a nine-point scale and within a half-point of each other. Pairwise comparisons revealed statistically significant differences in perceptions between non-users and monthly users, non-users and weekly users, and non-users and daily users, though these differences, which were on average about a half point out of nine in all cases, were not clinically significant. The statistical effect sizes of all differences were small. The majority of ratings individuals give the library was not explained by their usage level, but instead some other factor, possibly signaling. No statistically or clinically significant difference was found between non-users and quarterly users.

These results support a signaling and stakeholder interpretation of the relationship between perceptions of community college library service quality and usage level. A Revealed Preference interpretation was not supported by these results which indicate an insubstantial link between usage level and perceptions of service quality. Relatedly, weekly users reported higher perceptions of service quality than daily users indicating that, at least in some cases, higher usage is not always associated with increased perceptions of service quality.

For LIS researchers, this study helps to fill a much needed gap in the literature related to non-users and illuminates several directions for future research including: 1) follow up studies that explore non-users' motivations for rating libraries as they do, 2) studies focusing on the unique differences, if any, between non-users and very infrequent users, and 3) studies that elucidate daily users' lower relative perceptions of service quality.

There are also several implications for practicing library leaders including a recommendation to make better use of data, including LibQUAL+ data, to make

management decisions. Secondly, library leaders should use metrics beyond usage, including survey data gathered from both users and non-users to better illustrate their value to the campus, especially when faced with greater accountability or declining usage. Library leaders should consider the broader effects of their actions on all stakeholders, including non-users who may value the library for signaling purposes or other ends. Finally, these results suggest that the non-use of the library is not due to negative perceptions of its quality. Therefore, library leaders looking to improve usage levels should focus their efforts on better marketing their services, outreach to faculty, and greater curriculum integration. Having services that are perceived to be of high-quality is not enough to drive traffic to community college libraries. Instead, excellent marketing, outreach, and a broader understanding of stakeholders is also vital.

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