The Ties that Bind: Library E-Resources and Faculty Research

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Abstract

Increasingly, academic libraries are becoming more interested in visualizing collection usage statistics to demonstrate return-on-investment analyses. Data visualization provides a detailed view that connects subscription resources provided by the library to researchers, students, and faculty. Institution blinded supports its university's commitment to teaching and research by providing access to subscription based print and electronic information resources. This study used several data science techniques to create visualizations from survey data and a citation analysis to (a) assess faculty perspectives on finding information and using library resources affiliated with Montana State University (MSU); (b) examine the citation data from articles written by faculty to determine the degree to which their current collection is supporting their faculty. This article shares the results of faculty responses to this survey and how well the library supports the needs of faculty. This type of analysis informs collection development decisions and assesses the strength of the library's collection and its relationship to scholarly communication. This project is a part of the LIS Education and Data Science integrated network group It is sponsored in partnership with Drexel University and Montana State University.

Introduction

Recently academic libraries have been interested in visualizing collection usage statistics to indicate return on investment. Visualization provides a detailed view connecting the electronic resources the library provides to researchers, students, and faculty. Academic libraries support learning, teaching and research needs of students and faculty with a wide array of services (i.e., physical space, collection, instruction, reference, web service) and numerous others.

In 2021, the author received and participated in a fellowship. The primary purpose of this fellowship is to prepare Library and Information Science Faculty and early career information professionals to meaningfully integrate data science into their research and work endeavors. In fulfillment of the fellowship the author worked with (MSU) librarians. The focus of the fellowship project was to illustrate the connectivity of library electronic resources and the impact of faculty research.

Montana State University library supports the universities commitment to teaching and research providing access to subscription based print and electronic information resources. The university library print collection consists of 445,385 print books, 15,819 serials, and 11, 832 media items. Electronically, they have access to 314 databases, 251,389 books, 30,952 journals and 2,182 media items.

The objectives of this study are the following: (1) assess faculty perspectives on finding information and using library resources affiliated with MSU and ;(2) Examine the citation data from articles written by faculty, electronic access to these journals in effort to determine the degree to which the collection supports the faculty. The overall goal of this work was to indicate how faculty view library services and how well the collection supports the needs of faculty.

Literature Review

One of the many purposes of academic libraries is to support the learning, teaching and research needs of the wider academic institution and a major challenge is to create an effective collection that can meet these needs, in addition to managing a limited budget and rising resource costs [1,2]. Academic libraries also undertake the crucial task of collection evaluation to determine the collection's weaknesses, how budgets can be optimized, and assess whether the utility of the library is being maximized [3].

Academic libraries have adopted a wide array of approaches to evaluate collections (i.e., citation analysis, interlibrary loan analysis, content analysis of syllabi, surveys, focus groups and interviews [4]. Previous citation studies have been used to analyze articles and disciplines including but not limited to engineering, computer science, math, and many others [5-8]. The literature continuously indicates the application of citation analysis to various research topics, core journals and supports the research needs of researchers.

Another method indicating how the collection informs user needs is the 80/20 rule, indicating 80% of the cited resources can be found in 20% of the cited journal [9]. This rule helps determine the "core" journals most crucial to the research needs of a population [10]. The reference list may not list all the resources consulted and do not indicate the comprehensive picture of user needs because the list alone does not detail researchers' perspectives [9].

Basharun [11] surveyed academic staffs' perceptions of the University of Ilorin library's electronic resources. Murphy [12] surveyed faculty and students to assess their satisfaction with the library's collection and services, and understand how faculty and students utilized the collection, and their information needs and priorities. These approaches combined help guide, align, and foster the decision-making process for selection/deselection of library resources within collection development [13-14]. They also help researcher and institutions visualize the representation of resources.

Academic libraries are a factual platform intended for faculty and researchers in academia because it serves various communities of researchers who need research support services [15]. More specifically data visualization is useful depicting scholarly communication and research impact [16-17]. Visualization can also illustrate the connectivity of faculty research and library electronic resources and this information can validate return on investment. This study highlights the projects at (blinded) to fill this gap.

Methods

This study used two approaches to explore faculty perceptions on the effectiveness of the library and how the collection supports the faculty (i.e., survey and citation analysis) A nine-question survey was developed to explore how faculty accesses information for research, teaching/learning and rates their searching skills. The participants for this survey were recruited with the assistance of MSU librarians, they provided a list of ninety-two faculty members. The author sent targeted emails to the faculty members, providing information about the survey, the link for the survey, and deadline for completion. Participants were asked to rate how helpful the MSU Library has been in meeting their needs, assisting with publication contracts, determining, and assessing publication impact. Participants were asked whether there were additional

services or information resources that would help meet their information needs. Survey responses were downloaded to an excel spreadsheet for analysis.

Citation Analysis

The citation analysis study was based on a spread sheet of seventy-three MSU faculty members and their recent grant awards. MSU Librarians had been maintaining this record of information and provided it to the research fellows. Next, I used Scopus to compare this list of names to faculty publications and university affiliations. Scopus was used rather than Web of Science due to the ease of downloading citation authors and references and the comprehensive coverage Scopus provided over the published articles. This decreased the initial dataset to sixty-six faculty members because of the following reasons: (a) some faculty were listed on grants but did not have Scopus id's and (b) some faculty were no longer affiliated with MSU. From this revised list, two of the most recent publications were selected and a list of the cited references of these articles was compiled. This resulted in a total of four thousand cited references. Yet for the purpose of this study two thousand cited references are analyzed. More specifically, ten hours a week were allotted for project hours and there was not enough time to clean and analyze the total amount of citations. This reasoning was also based on the author's previous experience conducting a similar study in 2014. As well as the justification for not analyzing all the cited references being discussed with fellowship sponsors. They expressed no issues or concerns with this decision.

Cited references of the publications in this study were exported from *Scopus* and analyzed using MS-Excel spreadsheets. The two thousand cited references were selected randomly using MS Excel. The source field in the cited references was sorted to differentiate books/chapters, dissertations, conference proceedings journals, reports, and web resources. All these resources were coded to indicate electronic access, physical access, or no access. Electronic access is defined as research affiliated with (MSU) can access these information resources from the library webpage. Physical access is defined as references with call numbers associated with them. No access is defined as the library has neither physical nor electronic access to the cited references. The author noted several problems such as incomplete citations, inconsistent dissertation titles and journal abbreviations in the cited references.

Results
After emailing ninety-two faculty, the author received a nineteen percent response rate. Eighteen faculty members responded to the survey, the faculty demographic and departments represented are shown in the following tables. (i.e., see Table 1 and Table 2).

Table 1: Faculty and Researcher Demographic

Faculty affiliated with MSU range from Assistant, Associate and Full Professor. Other represents a respondent who identified themselves with their administrative title and note (assistant, associate, or full professor).
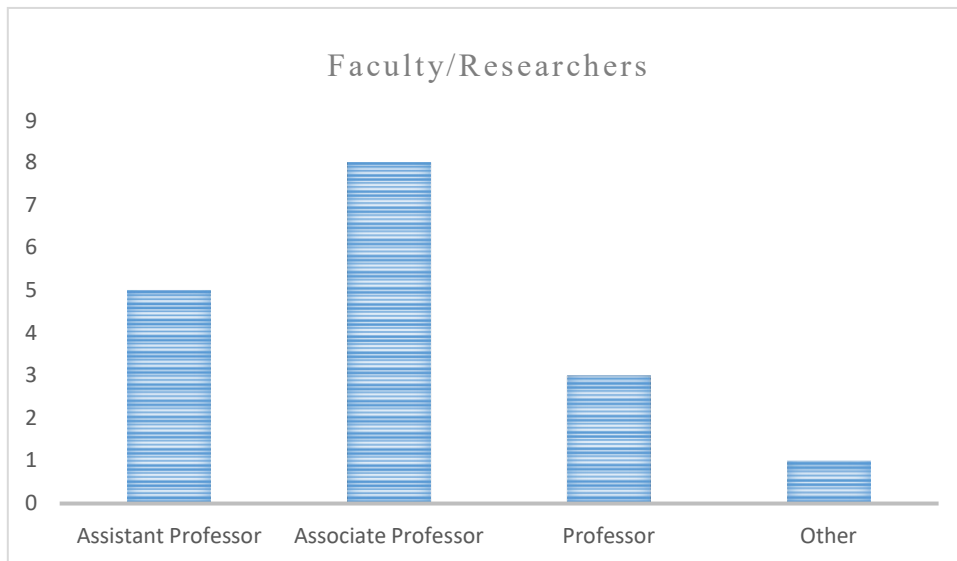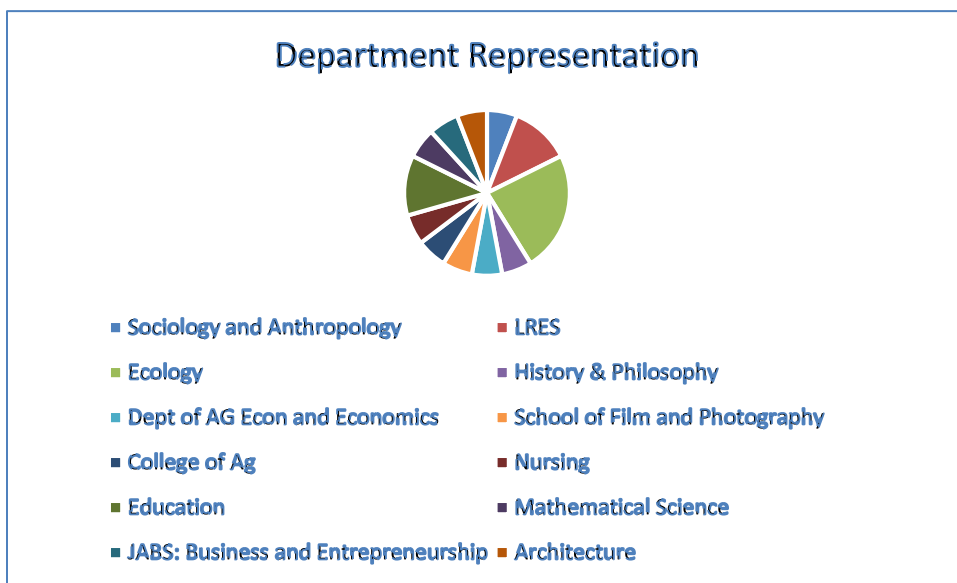
Faculty/Researchers

Table 2: Department Representation

Department Representation

- Sociology and Anthropology
- LRES
- Ecology
- History & Philosophy
- Dept of AG Econ and Economics
- School of Film and Photography
- College of Ag
- Nursing
- Education
- Mathematical Science
- JABS: Business and Entrepreneurship
- Architecture

Survey Responses
MSU faculty rated their skills at finding information as effective. Faculty also indicated the library has been effective in meeting their research, teaching, and learning needs. Respondents were also asked about additional services that would help meet their information needs. Respondents indicated the following responses:

- Loss of journal subscriptions
  (i.e., Wiley is a devastating problem)
- Quit discontinuing institutional subscriptions to the leading journals in my field of research

- Continue to help cover publication fees
- Good journal access is about 99% of what I need

Citation Analysis
The articles published by (MSU) faculty yielded a total of two thousand cited references. The type of

citations represented in this study are books/chapters/dissertations, conference proceedings and journals. Journals represent the most frequently used cited reference. The library maintains electronics access to 86% of the these journals, books, chapters and dissertations represent 13% and reports, technical memos and web resources represent 7%.

Outcomes

The goal of this work was to use data science, data visualization to provide a representation of the collection. More specifically it was to illustrate the bridge between faculty research and library electronic resource subscriptions. The purpose of this survey was to explore faculty perceptions of the library. More specifically did they find their own searching skills adequate, find the library useful and effective in meeting their needs. Respondents indicated they found the library useful in their research, teaching and learning needs, but also indicated disappointment and discontent with journal access.

This response was surprising to librarians andhighlights a level of disconnect in awareness and use of services faculty receive and have access to. The survey respondents' range in rank and in both science and social science disciplines. Yet it is not known if the respondents to the survey the same faculty within the initial dataset of sixty-five faculty members are. While the response rate to the survey was at least ten percent, a limitation of the study is that it does not represent all the faculty on the campus.

Lessons Learned and Limitations of this study

Institutional cultures and practices vary at universities. For example, at the author's home institution research is all around you and it is easy to reach out to faculty and research group. This level of accessibility is not uniform at all institutions based on culture and practice. For example, the reports of grants are publicly available at some institutions (i.e., not all). The results of citation analysis and survey are more a sample size (i.e. snapshot level analysis).

Conclusion

The survey responses and citation analysis work were shared with MSU librarians. They were pleased with this work as it fulfilled their initial research goals (i.e. visualizing a collection). As well as providing a snapshot analysis of how the libraries resources supported faculty. This type of analysis can inform collection development decisions and can be used to assess the strength of the library collection.

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