What Do Faculty Need? Academic Library Resources and Services That Increase Research Productivity¹

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Abstract
This paper describes a theoretical model of the relationship between faculty research productivity and academic library resources and services and a proposed empirical study that will reveal which academic library resources and services contribute to increased faculty research productivity.

Introduction
According to the latest available figures from the National Center for Education Statistics (NCES) Academic Library Survey (ALS), during the fiscal year 1998 the 3,658 academic libraries in the United States spent a total of $4.6 billion dollars on operating expenditures, held a total of 878.9 million volumes in their collections, and had 175.4 million circulation transactions (U.S. Department of Education, 2001). What is the impact of these figures on faculty research productivity? Higher education institutions have to make decisions about the allocation of limited funds among a number of programs. Academic library administrators need to be able to make a case to institutional decision makers and education policy makers in order to determine appropriate levels of funding and be able to make more informed decisions about the distribution of the allocations among a variety of academic library departments.

According to the U.S. Department of Education, library operating expenditures, as a percent of total institutional expenditures for educational and general purposes, have steadily declined for twenty years (see table 1).

With the decreasing amount of allocations to academic libraries, it is now more important than ever that academic library administrators be able to demonstrate the academic library’s usefulness to its institution. Lindauer (1998) suggested that assessment of academic libraries should be linked to institutional goals and academic library performance measures linked to those goals should be identified. She recommended that faculty research productivity be used as one of several outcomes to which academic libraries contribute. She defined faculty productivity indicators as the total number of grants secured, publica-
tions, presentations, creative works, etc. Her review of the library and information science literature revealed the scarcity of research demonstrating the impact of the academic library on institutional outcomes.

Similarly, Pritchard (1996) advocated linking measures of library quality with institutional outcomes and suggests using existing government data sources as academic library performance indicators. She stated, “The academic library is not a static free-standing unit. Ultimately, its quality must be judged by the quality of outcomes of the institution, however they are defined” (585). She also suggested using faculty research productivity (i.e., grants and publications) as an outcome measure.

Rosenblatt (1998) argued that traditional academic library measures like ARL statistics are inadequate for determining how well academic libraries are actually performing (i.e., library quality). She suggests that a new role for librarians might involve being judged on their contribution to faculty research productivity. She concludes her chapter by stating, “to maintain a significant role, its (the library) relation to the mission of the university must be more clearly articulated and strengthened and its contributions measured and assessed” (288–89).

Wolff (1995) stated that for accreditation purposes a new model of academic library quality should link the academic library with the mission of the institution by developing new data that he called a culture of evidence. He recommended that indicators of institutional quality include such things as the research productivity of faculty. He also stated that indicators of library quality linked to faculty research productivity include: reference staff, budget, reference inquiries by faculty, number and type of indexing and abstracting tools, and offerings in bibliographic instruction.

I concur with both Rosenblatt (1998) and Wolff (1995) that these new models for measuring academic library quality constitute a paradigm shift (Kuhn, 1970). These new models require academic library administrators to think differently about the ways they measure and define academic library quality.

Literature Review

Several library and information science and higher education authors examined the relationship between academic library resources and faculty research productivity but not as explicitly and extensively as this study intends to. For example, Budd (1995) compared faculty publishing productivity with library measures derived from the Association of Research Libraries (ARL) statistics which limited his sample to research universities. He measured faculty productivity by examining citations in the Institute for Scientific Information (ISI). He found medium to high correlations between the number of publications and number of volumes, total expenditures, materials expenditures, and professional staff. Because he used ISI to measure faculty publishing productivity he acknowledges that this favors faculty in the sciences and social sciences disciplines because ISI primarily contains citations to journal articles. He suggests that future research includes a selection of a larger population of institutions. Budd (1999) extends his prior study by using both ARL and the Association for College & Research Libraries (ACRL) data. Although he did find positive correlations between library resources and publishing activities, his study is again constrained by its reliance on ISI data to measure faculty publishing productivity.

Baughman and Kielyka (1999) examined and found a positive relationship between the numbers of publications produced by an institution in relation to its library holdings. However, like the studies by Budd (1995, 1999) they measured faculty productivity by using the ISI database.

The following studies about faculty research productivity are found in the higher education research literature. Since these studies are not primarily fo-

Table 1. Library Operating Expenditures as Percent of Total Institutional Expenditures for Educational and General Purposes.

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<tr>
<td>%</td>
<td>3.9%</td>
<td>3.8%</td>
<td>3.8%</td>
<td>3.7%</td>
<td>3.5%</td>
<td>3.4%</td>
<td>3.2%</td>
<td>3.0%</td>
<td>2.9%</td>
</tr>
</tbody>
</table>

Data were obtained from the National Center for Education Statistics, Library Statistics of Colleges and Universities and the Integrated Postsecondary Education Data System, Academic Library Survey.
cused upon academic libraries, academic library mea-
sures play a secondary and limited role in these stud-
ies. Using data from the National Research Council
(NRC) study, Dundar and Lewis (1998) developed
and tested a more comprehensive model of faculty
research productivity that included variables measur-
ing individual, institutional and departmental at-
tributes. A library expenditures measure was included
in the model to represent one of the institutional at-
tributes. The results of the study indicated that li-
brary expenditures were associated with increased re-
search productivity for faculty in the biological sci-
ences and physical sciences and mathematics.

Fairweather (1999) used data from the 1993
National Study of Postsecondary Faculty (NSOPF)
to develop and test a model of faculty research pro-
ductivity by various institutional types. He examined
a variety of factors that could be related to faculty
research productivity including background charac-
teristics, early socialization, self-motivation, work al-
location, climate/resources, rewards, etc. The one aca-
demic library measure in this study—perceived ade-
quacy of university library facilities—was included
in the climate/resources section. Although a positive
relationship was found between this measure and fac-
ulty research productivity at research universities, aca-
demic library administrators would be hard pressed
to make a case to institutional administrators to in-
crease funding based upon this finding.

Theoretical Framework
The theoretical framework for this study is derived
from an examination of other faculty productivity
studies found in the field of higher education. In ad-
dition to the previously mentioned models (Dundar
and Lewis, 1998; Fairweather, 1999), Blackburn and
Lawrence (1995) also developed a model of faculty
research productivity using National Center for Research to
Improve Postseco ndary Teaching and L earning
(NCRIPTAL) data. Their model contains many ele-
ments: socio-demographic characteristics, environmen-
tal conditions, social knowledge, environmental re-
response, self-knowledge, career, behavior, and social
contingencies. Although their model does not spe-
cifically address academic library resources and ser-
vices it’s important to consider it because the model
identifies additional elements that are useful for un-
derstanding faculty research productivity.

Middaugh (2000) developed a list of measures of
faculty research activities useful for studying faculty
research productivity. These measures included: the
number of refereed publications, number of textbooks,
externally funded grants, professional conference pa-
pers, etc.

I will conduct a study of faculty research produc-
tivity during the spring 2003 semester. The following
sections describe this study.

Research Question
This proposed research study is designed to provide a
comprehensive and in-depth examination of how aca-
demic library resources and services contribute to in-
creased faculty research productivity. This study will
address the following research question: After con-
trolling for faculty socio-demographic and career char-
acteristics, what academic library resources and ser-
vices are associated with increased faculty research pro-
ductivity?

The unique contribution of this study is that it
examines multiple measures of academic library re-
sources and services and faculty research productivity.
It includes a nationally representative sample of fac-
ulty representing all institutional types and a variety
of academic disciplines.

Research Methods
Data Sources
This study uses the following two datasets to test a
theoretical model describing the relationship between
academic library resources and services and faculty
research productivity. These datasets were collected
by the United States Department of Education Na-
tional Center for Education Statistics (NCES):

1. The National Study of Postsecondary Fac-
ulty (NSOPF:99) contains information about faculty
members’ socio-demographic characteristics, research
activities, satisfaction with the library holdings of their
institution, and information about their institution’s
characteristics.

2. The 1998 Integrated Postsecondary Educa-
tion Data System (IPEDS) Academic Library Sur-
vey (ALS:98) contains information about institutional
academic library resources and services.

Sample
The sample consists of 18,000 faculty members rep-
representing 960 postsecondary institutions (88.4% response rate for faculty information). The institutional types include public research, private not-for-profit research, public doctoral, private not-for-profit doctoral, public comprehensive, private not-for-profit comprehensive, private not-for-profit liberal arts, public 2-year and other. The faculty represent many academic fields including agriculture/home economics, business, education, engineering, fine arts, health sciences, humanities, natural sciences, and social sciences.

**Independent Variables**

There are three sets of independent variables in this study. The first set of variables, *Socio-Demographic Characteristics*, describe faculty members' age, race/ethnicity, and gender. The second set of variables, *Career Characteristics*, describe faculty members' field of teaching, whether or not they work full-time vs. part-time, their principal activity (i.e., research or teaching), their rank (assistant, associate, etc.), tenure status, highest college degree obtained, the amount of time they spend on their research, and rating of library holdings. The final set contains the variables of primary interest, *Library Characteristics*, which includes variables about the number of professional library staff, the number of monographs and journals in the collection, the amount of library expenditures, the amount of circulation transactions, etc.

**Dependent Variables**

The dependent variable is *Faculty Research Productivity* defined as the number of journal articles published in refereed and non-refereed journals, the number of books published, the number of book reviews, the number conference presentations, and the number of grants obtained during the last two years.

These four sets of variables comprise the theoretical model tested in this study. See Figure 1 for a graphical representation of the theoretical model.

**Data Analyses**

I will run a series of eight multiple regressions using

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<th>Socio-demographic Characteristics</th>
<th>Faculty Research Productivity</th>
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<tr>
<td>Age</td>
<td>Journal articles (refereed)</td>
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<tr>
<td>Race/ethnicity</td>
<td>Journal articles (non-refereed)</td>
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<td>Gender</td>
<td>Books, textbooks, etc.</td>
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<td>Book reviews</td>
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<td>Presentations</td>
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<td>Grants</td>
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<th>Career Characteristics</th>
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<td>Field of teaching</td>
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<td>Full vs. part-time</td>
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<td>Principal activity</td>
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<td>Rank</td>
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<td>Tenure status</td>
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<td>Highest degree</td>
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<td>Time spent on research</td>
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<td>Perceptions of library holdings</td>
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<th>Library Characteristics</th>
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<tr>
<td>Number of professional library staff</td>
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<td>Librarian's wages and salary</td>
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<td>Number of monographs</td>
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<td>Number of journals</td>
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<td>Journal and book expenditures</td>
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<td>Reference transactions in a typical week</td>
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<td>Circulation (general)</td>
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<td>Computer files &amp; search services expenditures</td>
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<td>Document delivery/interlibrary loan (returnable)</td>
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<tr>
<td>Document delivery/interlibrary loan (non-returnable)</td>
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<td>Reference transactions</td>
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<tr>
<td>Presentations to groups</td>
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<td>Number of people attending group presentations</td>
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<td>Satisfaction with library holdings</td>
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What Do Faculty Need?

SPSS software. Each regression represents each institutional type (i.e., public doctoral, public 2-year, etc.) and examines the contributions of faculty members’ socio-demographic characteristics, career characteristics and academic library services and resources on faculty research productivity. Analyses by institutional type are important because the purpose of the academic library varies by institutional mission.

Conclusions
The findings from this study will reveal if the amount of academic library resources and services impacts the research productivity of faculty in different academic disciplines employed in different institutional types. These results will be useful to academic library administrators as they make decisions about how to allocate limited funds to support various academic library collections, resources, and services.

Note
1. This project was awarded the 2002 Carroll Preston Baber Grant from the American Library Association.

Bibliography