The Contribution of the Library to the Reputation of a University

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Available online 6 December 2008

INTRODUCTION

The purpose of this study was to examine the relationships between U.S. News and World Report institutional reputation rating and selected university performance indicators. The hypothesis was that university performance indicators, including those of the library, were predictors of the U.S. News and World Report reputation rating for doctoral institutions. While some measures of institutional performance have been studied with respect to the library’s contribution, data showing the relationship between the institution’s reputation and the library have not been reported in the higher education or library literature.

Reputation, while a subjective measure of an institution, is important in numerous ways. A university’s good reputation has economic benefits for the institution, the students, and donors. Students who attend schools with better reputations have a greater likelihood of attending graduate school and of attending better graduate schools. When rankings change, there can be turnover among deans and in the socioeconomic composition of the student body in top-ranking schools. Changes in the reputational rating can affect student and faculty recruitment. Reputation, is closely related to prestige and is a result of faculty research and publication and strong graduate programs. Since 1990, reputation has been the most influential factor in students’ choice of colleges.

The U.S. News and World Report reputation score derives from responses of university administrators. While this measure of institutional status may not be ideal, it is an important one in the decision process performed by students seeking higher education as well as by faculty in making decisions regarding career moves and programs. In addition, this subjective score is significantly related to percent of students graduated, an important measure in describing institutional performance.

This study was designed to identify the role of the library in contributing to the doctoral institutions’ reputational scores. To accomplish this, relevant institutional and library measures were assessed.
Academic Libraries

Although the presence of an academic library is generally assumed in colleges and universities, the higher education literature rarely includes it in empirical studies. It is problematic to what is written "consistently portrays librarians as ancillary to the academic enterprise." This omission is difficult to rationalize. Throughout history, there has been a widespread assumption that the library was the intellectual focal point or "heart" of the university. However, the first link between libraries and the quality of undergraduate education appeared in the literature as recently as 1986 in the Carnegie Foundation Report on Colleges. Others have commented that academic libraries are largely invisible to university administrators or misinterpret its functions in accomplishing the missions of the institution. University budget allocations to their libraries decreased from 3.7% to 2.5% in a ten-year period. It is possible that there is a relationship between the decrease in funding and the lack of visibility of the library in the higher education research literature.

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There is a growing consensus that the library should be recognized as a partner with other entities in the university in supporting the institutional mission, resulting in increased integration of the library. This would be evidenced by increased external funding for the library, visibility to its constituency, leadership on campus, and use through circulation and interlibrary loan statistics. Library administrators and professional organizations are beginning to develop measures that represent the contribution of the library to outcomes and its value as a service organization. However, in the higher education literature, library activities, resources, and services have been intertwined with other institutional activities, resources, and services so that it is challenging to disaggregate the library's contributions. The focus of the contemporary academic library is to be an active learning center rather than simply a repository of books and journals. In addition, the increased utilization of electronic resources implies that traditional measures of library function (i.e., collection size) could be less important. As such, there is need to determine the relevant variables involved in contributing to the institution's reputational rating.

Review of the Literature

This section considers some institution-wide factors that contribute to performance, reputation, and quality.

University (Non-Library) Measures

Expenditures for instruction, research, and student services are focal areas for doctoral institutions; can be indicators of excellence; and are the fastest-growing expenses in both public and private institutions. There are studies that indicate that higher per student expenditures had an effect on student gains in interpersonal skills and learning, on graduation rate, and library resources. Student services expenditures are those that directly benefit students. Expenditures per student influence prestige.

Research expenditures are the amount that an institution spends to conduct research activities. Grants are the primary source of funding for research. To attract research funding, an institution must invest in top quality faculty, facilities, and graduate education programs. The research produced by an institution is an indicator of its academic stature and it generates revenue.

University Libraries

Due to the accessibility of information online and the simultaneous increase in financial pressures on colleges, there are questions about whether academic libraries are still needed. But libraries are components of universities important in fostering lifelong learning; can influence learning and critical thinking; and have demonstrable effect on student retention. Libraries were a factor considered by faculty in determining whether to remain at their institutions or whether to accept positions that had been offered to them. Faculty who perceive that their library's resources were inadequate admitted that this was a barrier to their work.

The explosion of information available through the Web has increased the need for information literacy competency. Information literacy "provides the essential context for technical know-how, the skill in navigating through complex cyber-systems of information." Information literacy was included in regional accreditation standards and in standards developed by the library profession. It is important to faculty that academic librarians teach college students information literacy competencies. The extent to which library instruction is integrated in a higher education curriculum is considered an indicator of the library's success.

Library professional staff have a greater role than they did in the past in university teaching, research, and information policy. Their collaboration with faculty helps to improve teaching and learning and adds value to the information search process for students. Reference services provided to undergraduate students seem to be an effective means for teaching students about specific library resources and about the process of finding, evaluating, and using information. Since library professional staff have unique competencies, their contribution to institutional reputation was important to examine.

Methodology

This study examined the relative importance of several measures of institutional performance, and specifically, the contribution of the library performance measures, to the U.S. News and World Report reputational ratings.
for doctoral universities. The hypothesis on which this study is based is that university performance indicators, including those of the library, are predictors of the U.S. News and World Report reputational rating.

The Carnegie Classification was used to differentiate institutions by programmatic emphasis.87,88 The institutions were classified by types of programs offered and analyses also were performed with those subgroups (these data were not included in this report). The Type I institutions (32% of the sample) were those with a single doctoral education program. The Type II institutions (30% of the sample) were those with a comprehensive doctoral program, including medical/veterinary programs. The Type III institutions (16% of the sample) were those with a comprehensive doctoral program but without medical/veterinary programs. The Type IV institutions were those with doctoral programs in the humanities and social sciences. This type was not analyzed separately due to insufficient data. The Type V institutions (19% of the sample) were those with programs that were predominantly science, technology, engineering, and mathematics (STEM-dominant). Finally, there were a few institutions that were not classified.

The analysis involved the 247 doctoral universities (essentially Types I–III and V) with reputational rating scores listed in 2000, 2002, and 2004 in America’s Best Colleges. The study employed correlation and regression analyses of secondary data to accomplish this. The dependent variable was the U.S. News & World Report Peer Assessment Score (PAS) of institutional reputation. The independent variables were considered in two dimensions. The first, “institution”, represented measures commonly employed in considering the academic standing of a university: grants; expenditures for instruction, research, and student services; and alumni, corporate, and foundation giving. The second dimension, “library”, represented measures of services (not collections). The variables in the “library” dimension were: library expenditures, library instruction presentations, number of participants at library presentations, reference transactions, and library professional staff. These variables represent functions that cut cross boundaries within colleges and universities. The data for this study were extracted from the following data sets:

- **U.S. News & World Report** “America’s Best Colleges”89 Reputation was operationalized by using the Peer Assessment Score (PAS).

- **Integrated Postsecondary Education Data System (IPEDS)** Dataset Cutting Tool (http://nces.ed.gov/ipeds/find_data/data_cutting_summary.asp). The IPEDS data set is a recognized source for cost analysis.90

**Voluntary Support of Education (VSE)** (http://vse.caе.org/). This survey has authoritative information on private giving to higher education in the U.S. The Council for Aid to Education manages the survey.

- **Academic Library Statistics** (http://www.ala.org/ala/acrl/acrlpubs/academiclibrarystats/index.cfm). These data are published by the Association of College and Research Libraries (ACRL). The data sets include records for almost all of the college and university libraries in the U.S.

- **Association of Research Libraries** (ARL) (http://www.arl.org/stats/annualsurveys/arlstats/index.shtml). These data describe the collections, expenditures, staffing, and service activities for the 123 invited member libraries.

- **National Center for Education Statistics** Academic Library Survey (NCES) (http://www.nces.ed.gov/surveys/libraries/academic.asp). This survey produces data every two years on activities and services of academic libraries in the U.S. Each variable was modified by the size of the student body.91

This standardization is commonly employed in analyses of higher education issues yielding variables that represent student FTE. Differences in the annual value of the dollar were corrected using the Higher Education Price Index (http://www.commonfund.org/). The reputation values for 2004 were studied with independent variables from 2000 to produce a 4-year lag.92 The data and scatterplots showed wide ranges and large standard deviations suggesting a skewing of values with some larger values dominating the general shape of the distribution. The independent variables were transformed to natural logarithms to better approximate symmetry in the frequency distributions.

**Validity and Reliability**

Although the U.S. News & World Report ranking of colleges became a “gold standard”,93 the methodology used to determine the rankings has raised questions since its inception.94,95 It weighs institutional reputation more heavily than the other indicators, though reputation scores were consistent with other quality measures.96 The rankings may favor private institutions,97 and there are concerns that they do not consider the student perspective.98–101 However, quality of education may have little relationship with the institution’s resources and reputation.102 Institutions can achieve a high degree of student-centered performance if they have a small student–faculty ratio, high graduation rate, and resources for scholarships and libraries.103 Another criticism of such quality measures is that status and reputation become goals themselves.104

Since IPEDS, ACRL, ARL, and NCES collect their data through census, concerns regarding reliability issues may be reduced. However, there may be differences

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within institutions and among states in their reporting practices and interpretation of data definitions.\textsuperscript{105} To ensure maximum accuracy of the data, NCES conducted edit checks. Edit reports were then produced and imputations performed.\textsuperscript{106}

Some data were missing and may pose a threat to internal and external validity. Listwise deletion was the strategy used to handle missing values.\textsuperscript{107,108}

### DATA ANALYSIS

Preliminary analysis included histograms and descriptive statistics for each of the variables. Pearson Product-Moment Correlation Coefficients and scatterplots were calculated to determine the degree to which there was covariance.\textsuperscript{109} The $R^2$ and $F$ statistic were included in the analyses to determine the measure of model fit.\textsuperscript{110}

A number of multiple regression models were considered involving the total sample of schools as well as those within the individual Carnegie Classification Types. This report includes five multiple linear regression models dealing with the 247 schools. The first model determined the amount of variance explained by the variables comprising the institution dimension. The second model determined the amount of variance explained by the variables comprising the library dimension. The third model determined the amount of variance explained by including all of the institution and library dimension variables. The fourth model determined the variance explained by sequentially adding the library variables to the regression established using the institution dimension variables. The fifth model determined the variance explained by sequentially adding the institution variables to the established regression using the library dimension variables.

### Descriptive Statistics

**Table 1** shows the descriptive statistics for the institutional (other than library) variables. **Table 2** shows the descriptive statistics for the library variables.

**Table 3** shows the correlation coefficients for the library variables with PAS. There was a statistically significant correlation between the PAS and library professional staff, reference transactions, library presentations, and library expenditures per FTE. There was a very high correlation between total library expenditures and library professional staff per FTE ($r=0.93$ [highly significant]).

### Regression Analyses

**Institution dimension only and library dimension only models**

**Table 4** displays the results of multiple regression analyses using the PAS and two models: a model using the set of logged values for the institution dimension variables, and another using the set of logged values for the library dimension variables. The data shown include the intercept (the value representing the reputation variable (PAS) before considering the effects of the

<table>
<thead>
<tr>
<th>Library Prof Staff/FTE</th>
<th>Reference Transact/FTE</th>
<th>Presentations/ FTE</th>
<th>Attendees/ FTE</th>
<th>Total Library Expend HPI/FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Valid</td>
<td>242</td>
<td>207</td>
<td>241</td>
<td>239</td>
</tr>
<tr>
<td>Mean</td>
<td>0.004</td>
<td>5.5</td>
<td>0.038</td>
<td>0.567</td>
</tr>
<tr>
<td>Median</td>
<td>0.003</td>
<td>4.2</td>
<td>0.031</td>
<td>0.507</td>
</tr>
<tr>
<td>Std. deviation</td>
<td>0.003</td>
<td>4.9</td>
<td>0.025</td>
<td>0.331</td>
</tr>
<tr>
<td>Range</td>
<td>0.029</td>
<td>41.6</td>
<td>0.152</td>
<td>2.5</td>
</tr>
</tbody>
</table>
predicting variables) and the regression coefficients (the measure of the relative change in the reputational value associated with a change in the predicting variable.) Seventy-three percent of the variation in the PAS could be explained by the institution dimension variables. In this regression, coefficients for grants, instruction expenditures, and foundation giving (each adjusted for student FTE), were statistically significant \((P<0.05)\). The regression coefficient for the variable, alumni giving per FTE, was statistically significant at the \(P=0.001\) level.

Fifty-six percent of the variation in the PAS could be explained by the library dimension variables. The regression coefficient for the logged value of the variable, library expenditures per FTE, was statistically significant at the \(P<0.001\) level. The regression coefficient for the logged value of the variable, attendees at library presentations, was statistically significant at the \(P<0.05\) level.

Combined institution and library dimension models

Table 5 shows the results of multiple regression analyses with the PAS and three different combinations of institution and library dimension variables. The first includes the logged values of all of the institution and library dimension variables. The second includes the institution dimension variables as a group with the library dimension variables entered in a stepwise fashion using the criterion of next significant contributing variable. The third model includes the library dimension variables as a group with the institution dimension variables entered in a stepwise fashion.

As seen in Table 5, the variation in PAS reputational score explained by these three models was essentially the same (e.g., 75% vs. 74%). In the first model involving both institution and library variables, the significant regression coefficients for the log values of the variables were expenditures for instruction, alumni and library. In the second model, involving institution variables fixed and library variables sequentially added, the significant regression coefficients were alumni giving, foundation giving, and library expenditures. In the third model involving library variables fixed and institutional ones added sequentially, grants, alumni giving, instruction and library expenditures, each adjusted for student FTE, were statistically significant.

The significant regression coefficients in each model describe changes in the reputational score and the predicting variable, given the lag period involved. For example, in the third model, for every log dollar per FTE increase in grants in 2000, the 2004 PAS increased by...
For every log dollar per FTE increase in alumni giving in 2000, the 2004 PAS increased by 0.13, and for every log dollar per FTE increase in library expenditures in 2000, the 2004 PAS increased by 0.36. For every log dollar per FTE increase in instruction expenditures in 2000, the 2004 PAS increased by 0.28.

In assessing the fitness of the model involving fixed library and stepwise-entered institution variables, the library dimension variables explained 57% of the variance in the 2004 PAS ($F = 37.392, df = 5, 140; P < 0.001$). When the institution variables were added, using the stepwise criterion, the first entered was grants per FTE ($F = 47.373, df = 1, 139, P < 0.001$). This increased the explanation of variance by 10%. The second variable entered was alumni giving per FTE ($F = 53.147, df = 1, 138; P < 0.001$), which increased the explanation by 6%. The third variable entered was instruction expenditures per FTE ($F = 49.582, df = 1, 137; P < 0.01$). This increased the explanation by 1%. The final $R^2$ was 74 ($F = 40.692, df = 1, 137; P < 0.001$).

**DISCUSSION**

In the regression models considered in this report, fifty-seven to seventy-five percent of the variation in the PAS reputational score was explained by the independent variables. This implies that the variables selected for this study were important when considering institutional reputation. The findings must be considered relative to three important conditions:

1. Each variable was adjusted to account for the size of the full-time study body.
2. The dollar variables were adjusted to a common dollar value.
3. The analysis considered the effect of a four-year lag between the values of the predicting variables (i.e., 2000) and the values of the dependent variable (i.e., 2004).

The first two are standardizations well established in higher education research. The last is based on the belief that outcomes associated with educational efforts take time to mature. While four years may or may not be sufficient, the nature of the data precluded a longer period.

The findings showed that the role of the library was important, as are other cross-institutional functions included in this study, in contributing to reputation. The variable, library expenditures, was a consistently significant predictor in all appropriate models. In the models that included both the library and institution...
dimension variables, two of the statistically significant variables, grants and alumni giving, could be considered aspects of a university’s activities occurring outside of the institution itself, and are likely to enhance institutional reputation in several different arenas. The other statistically significant variables, instruction and library expenditures, are activities that affect students and faculty across the institution. Their effects may be longer-term and influence the perceptions of alumni and about their institution.

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The fact that the variable, library expenditures, was the only one contributing to all of the appropriate models, may affirm the continued importance of the library to universities. The disintermediation caused by the rapid increase in online access to information does not seem to have displaced the library. These results suggest that the libraries in the doctoral institutions included in the study may have adjusted and found solutions to unprecedented external pressures. Some of those adjustments and solutions might include:

- Alignment of the library with universities’ missions
- Participation in curricula development related to information literacy competency
- Developing new scholarly communication models
- Integrating spaces and functions for student learning outside of the classroom in the library facility

Libraries continue to have an important symbolic role in universities. The metaphor, “heart of the university” has endured for more than a century. Because they are a campus-wide support service rather than a more self-contained academic department, they occupy “neutral” space on a campus. Activities and functions can be more successful in the library than in other locations because of that neutral status.

**Boundary Spanning**

Boundary spanning is a theoretical construct that may provide a lens for beginning to understand the findings in this study. Boundary spanning seems relevant because many functions of the university as well as the academic library are campus-wide entities with somewhat permeable boundaries; are highly decentralized and fragmented systems; and lack cohesion.

Besides the autonomy of the academic departments, universities have separate academic, student, administrative, and athletic cultures that have different proponents, values, and expectations. The library, student services, institutional advancement, and research and grants are functions that can be characterized by boundary-spanning communication. To be effective, people who work in these areas create partnerships; form relationships with individuals and organizations; have a broad perspective of the institution; and have much control over acquiring, interpreting, and communicating external information.

As a boundary spanning unit, the library should interact with and have an effect on the institution as a whole. At colleges that had high faculty perceptions of library service, more librarians were involved in boundary spanning. For a library to contribute to institutional reputation, it must be well-perceived within its own institution and have positive visibility outside of its institution.

The amount of library expenditures is an indicator of the success of the library administrators in obtaining funding from the institution for library resources and services. While this reflects on the ability of the library administrators to convince the other administrators of the value of the library across the institution, it also represents the success of the programs offered. The library is a focal point for instruction outside of the classroom. As such, it can be a significant factor in the student’s accomplishments and hence in promoting the prestige of the institution.

In this era of fiscal restraint and increased accountability, it is necessary for institutions of higher education to collaborate more, reduce costs, and improve service to their communities. Libraries are an example of an area in which this is happening. Collaborative work requires boundary spanning across a campus as well as with off-campus organizations. It involves support for “the missions and goals of the collaborating partners, allows for the establishment of a network of colleagues, educates those involved on the programs, services, and goals of other units, and, most importantly, promotes success among students.”

**Significance**

This study was significant for a number of reasons. It was the first to examine the contribution of the academic library to the reputation of doctoral universities. This is important because of the vulnerability of libraries to increasing financial pressures on higher education institutions. Closer scrutiny of spending and the demand for accountability require that libraries provide empirical evidence of their value to their parent institutions. This study provides evidence that libraries do contribute to university reputations. Since the library absorbs a very small percentage of a university budget (2.5% average), this study shows that the contribution of the library is disproportionately high relative to its cost to the institution.

The study used quantitative variables that reflected library service activities, not library collection measures. Library collection measures are no longer sufficient to
describe the value of the library to an institution. The Kellogg Foundation recommended research in areas “that contribute to the creation, retrieval, delivery, and preservation of knowledge.” This study is within the scope of that recommendation and should stimulate attention to the relationship between the academic library and its parent institution on the part of higher education faculty and policy-makers, and university administrators.

Limitations

There were several limitations to this study. One limitation was that the ACRL and ARL data sets included only three library services measures (reference transactions, instructional presentations, and attendees at group presentations). Therefore, the contribution of other aspects of library services to institutional reputation could not be considered.

The amount of missing data for some of the variables could make interpretation and generalization difficult. In particular, more than 20% of the data were missing for the following variables: alumni giving (21%); corporate giving (28%); and foundation giving (21%). Another limitation is the relatively short time span considered. In attempting to consider lag and dealing with consistency of data, the time span was necessarily restricted to the period from 2000 to 2004. The evolutionary development of a reputation may require much longer periods.

One last limitation is that this study did not infer relationships that might have led to changes over time. Instead, the objective was to determine the presence of particular variables as significant predictors of the reputational score in 2004. It did not predict or explain what was found in one time period by the results of a different time period. It did establish the importance of considering an expanded set of measures dealing with library services and behaviors in enhancing the reputation of the university. Given the prevalence of electronic resources, the findings from this investigation indicate that the library is important as more than a physical entity. Defining what it needs to be in the 21st century is a compelling question for the field of higher education.

Acknowledgments: I would like to acknowledge those who advised me on the research for this paper: Dr. James Hearn, Dr. James Guthrie, Dr. Will Doyle, Dr. John Collins, and Dr. John Weiner.

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