Research Evaluation

ARL LIBRARY ASSESSMENT CONFERENCE

Patricia Brennan

Product Manager, Thomson Reuters (Scientific)
August 6, 2008
AGENDA

• Research Background
• Drivers
• Stakeholders
• Findings
• Library Support in Institutional Research Evaluation
A WORLD VIEW
EVALUATION TRENDS

Breakdown Products by Report and Customer Type 2004-2007

<table>
<thead>
<tr>
<th>Customer Type</th>
<th>CR Count</th>
<th>IR Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Institute</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Non-Profit</td>
<td>77</td>
<td>13</td>
</tr>
<tr>
<td>Intl Govt</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td>Govt</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Corp</td>
<td></td>
<td></td>
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<tr>
<td>Publisher</td>
<td></td>
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<tr>
<td>Acad</td>
<td></td>
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</tbody>
</table>
Drivers for increased evaluation and assessment

- Funding Pressures
- Efforts at Objective Approaches to Promotion and Tenure
- Reputation Management and Demonstration of Achievement
- Big Science, Large Scale Medical Research Projects
- Global Competition in the Sciences
- Changing Nature of Scholarly Journal Publishing
Who are the stakeholders in research evaluation

External Entities
- Government agencies/funding organizations

University Management
- Management, including committees, provost, vice provosts

University Departments
- Institutional research, academic affairs, tech transfer, etc.

Individuals
- Faculty, staff, students

We want to know how the funds that we have granted have been effective in promoting research.

I’m responsible for seeing how we’re doing overall in performing in terms of bringing in research dollars in overall publications.”

For those aspirational peers...I want to go in and evaluate the faculty and those departments to give me a direct comparison, then I get every single faculty member and run them through the citation index”

“We have built a research information system which is fully integrated with all of the systems—library, research office, grants, and the university -- it’s CV driven, and so every researcher in the institution can access a web based, online view and over time create a research profile for themselves containing up-to-date publications”

“Every author should have access to reports that tell them where they stand, how they compare and where to find the best collaborators and people they should be working with.”
Country segmentation: approaches to metrics

Where countries fall in the segmentation will drive their attentiveness to benchmarks and methodology.

Country Performance Metrics Segmentation

Observations

- Most countries still regard their systems for evaluating research as somewhat experimental.
- The general trend among countries is movement toward the upper-right quadrant.
- UK/Australia may establish global standard, and will be moving toward an even more PM centric systems in 2008.
- Project funding in US is becoming increasingly metric dependent.

1 European Research Council
## Institutional Measurement

Research Performance Measures - are currently the most reliant on external information sources and benchmarks.

### Key Areas

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Operational</th>
<th>Economic</th>
<th>Academic</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day to day operational decisions</td>
<td>Ongoing institutional funding</td>
<td>Student recruiting and alumni donations</td>
<td>Funding distribution, faculty recruiting and evaluation</td>
<td></td>
</tr>
<tr>
<td>Faculty salaries</td>
<td>Revenue/expenditures</td>
<td>Enrollment</td>
<td>Research funding</td>
<td></td>
</tr>
<tr>
<td>Real estate usage/expense</td>
<td>Employment</td>
<td>Programs available</td>
<td>Publications/citations</td>
<td></td>
</tr>
<tr>
<td>Position openings</td>
<td>Economic impact</td>
<td>Student performance</td>
<td>Patents/licenses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction</td>
<td>Selectivity/rankings</td>
<td>Awards/honors</td>
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</tr>
<tr>
<td>Audience</td>
<td>Operational</td>
<td>Economic</td>
<td>Academic</td>
<td>Research</td>
</tr>
<tr>
<td>Provost</td>
<td>Provost</td>
<td>Faculty Size</td>
<td>Faculty Size</td>
<td>Faculty Size</td>
</tr>
<tr>
<td>Dept. heads</td>
<td>Local/State/Ministry Government</td>
<td>Provost/Dept</td>
<td>Provost/Dept</td>
<td>Provost/Dept</td>
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<tr>
<td></td>
<td></td>
<td>Students/Alumni</td>
<td>Students/Alumni</td>
<td>Students/Alumni</td>
</tr>
<tr>
<td>Source</td>
<td>Operational</td>
<td>Economic</td>
<td>Academic</td>
<td>Research</td>
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<tr>
<td>Internal</td>
<td>Internal</td>
<td>Internal</td>
<td>Internal</td>
<td>Internal</td>
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<tr>
<td></td>
<td>Economic impact data</td>
<td>ERP external</td>
<td>ERP external</td>
<td>ERP external</td>
</tr>
</tbody>
</table>

**PROJECT SCOPE**
# TYPES OF RESEARCH ASSESSMENTS

<table>
<thead>
<tr>
<th>Measurement and Assessment Projects for Various Purposes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Indicators: Overall output measures and institutional benchmarks</td>
</tr>
<tr>
<td>Program Reviews and Assessments</td>
</tr>
<tr>
<td>Researcher Promotion and Tenure Reviews</td>
</tr>
<tr>
<td>Growth and Strategic Direction</td>
</tr>
<tr>
<td>Big Science / Multidisciplinary Collaborative Research Projects</td>
</tr>
<tr>
<td>National Level Assessment Programs</td>
</tr>
</tbody>
</table>
## KEY MEASURES

### What gets measured?

<table>
<thead>
<tr>
<th>Grant funding</th>
<th>Enrollment Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty salaries</td>
<td>Faculty Reputation</td>
</tr>
<tr>
<td>Research expenditures</td>
<td>Faculty Turnover</td>
</tr>
<tr>
<td>Rankings</td>
<td>Teaching Performance</td>
</tr>
<tr>
<td>Patents</td>
<td>Accreditation Evaluation</td>
</tr>
<tr>
<td>Research output</td>
<td>Endowment Growth</td>
</tr>
<tr>
<td>Graduation rates</td>
<td>Faculty and Student Diversity</td>
</tr>
<tr>
<td>Private gifts</td>
<td>Internal Funding Sources</td>
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<td></td>
<td>Peer Comparisons</td>
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<td></td>
<td>Student Performance/ Retentions</td>
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</table>
WHY MEASURE?

“There are two reasons that most universities look at something as important . . . it allows us to operate . . . it allows us to improve our image.”

LOFTY GOALS

“The ultimate aim of the performance appraisal is to maintain quality and continuously improve quality.”

“Fix what is wrong, improve what is good, and extend what is perfect.”

“Our ultimate goal is excellence in teaching and research.”
WHY MEASURE?

“You know, 20 years ago a faculty member was assigned an office and a lab, and he pretty much had to die before his lab ever was taken away from him. Now they’re given an office and they’re given access to laboratory space, but there’s no vested ownership of that space. Whether they can use it or not truly depends on their access to funding, and departments are moved around and reshuffled and reorganized based a lot on the research goals that the school or the individual department, centers of institute set, and those processes are conducted basically on a three-year review cycle.”
CHALLENGES

“. . . there’s no question that we’re all becoming more data intensive in how we make these decisions . . .”

“Depending on the evaluation, the university may or may not invest additional resources into the program.”

“. . . the way we have to do it now is kind of awkward . . .”

“As funding becomes tighter, it becomes more and more important to be able to say in an organized manner, ‘we have spent our funds well.’”
# CHALLENGES

**DESPITE GOALS AND MANY DISPARATE EFFORTS**

<table>
<thead>
<tr>
<th>Sourcing and Compiling Data</th>
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<tbody>
<tr>
<td>Coordination across types of assessments: duplicative efforts</td>
</tr>
<tr>
<td>Standard Measures Across Institutions, Countries: need understanding of organizational attributes and structures</td>
</tr>
<tr>
<td>Confidence in Methodologies and Approaches: the right tools for the job</td>
</tr>
<tr>
<td>Confidence, Training in Systems and Tools</td>
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<tr>
<td>Want Central Databases and Up to date systems</td>
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</table>
## HOW IS EVALUATION CONDUCTED?

<table>
<thead>
<tr>
<th>Method</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientometrics</td>
<td>• Citations</td>
</tr>
<tr>
<td></td>
<td>• Output</td>
</tr>
<tr>
<td></td>
<td>• Use and User Logging</td>
</tr>
<tr>
<td>Peer Review</td>
<td>• Formal</td>
</tr>
<tr>
<td></td>
<td>• Informal</td>
</tr>
<tr>
<td>Surveys</td>
<td>• Incoming</td>
</tr>
<tr>
<td></td>
<td>• Outgoing</td>
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Is there an Institutional Research Evaluation Workflow

Identification of researchers and their work

Data and metrics to create reports for external agencies such as an external funding body

Data Validation and Metadata Management

Enabling access to data via internal systems and repositories such as the IR searching

Populating local systems by harvesting and via API

Methods, Metrics and Reports Definition
ROLES FOR THE LIBRARY IN RESEARCH EVALUATION

- Tying research evaluation activities to core library services – collections (journals) and services that are acquired, used, cited, etc
- Application through enhanced, integrated, flexible services, collections, and support systems
- Increased role for Institutional Repositories
- Coordination among collection and use of data
- Understanding of integrated systems development
- Equipped at researcher level service delivery
- Application across multi level campuses or collaboration institutions
- Policies, Best Practices,
- Technology Support for interactivity and data supplies
What to measure? When?

- Total Papers / Total Citations
- Citation Impact (cites per paper)
- Percent Cited
- Impact Relative to Field
- Percentile Rank in Field
- Collaboration Indicators
- Expected Citation Count
- Ratio of Citations to Expected citation count
- Expected Citation Rate for Category
- Mean / Median Citation
- H Index
- Citation Frequency Distribution
- Time Series Trends
- Disciplinarity

Authors
Institutions
Departments
Nations
Journals
Fields / Topics
What to measure? When?

- Downloads
- Source of Downloads
- Items in Alerts, Comments
- Presence in the network

Authors
Institutions
Departments
Nations
Journals
Fields / Topics
Resources

• Beyond the RAE 2008: Bibliometrics, League Tables and the REF-- A one day conference 30th April 2008
  
  Jointly sponsored by King’s College London and Thomson Reuters
  
  – http://scientific.thomson.com/kcl/

• Research Evaluation Site
  

• White Paper: Using Bibliometrics: A Guide to Evaluating Research Performance with Citation Data

• White Paper: Using Bibliometrics in Evaluating Research

• Science Watch: Tracking Trends and Performance
  

• Regional and Expanded Journal Content
  
  – http://scientific.thomsonreuters.com/free/essays/selectionofmaterial/regionalcontent/
Ten Rules in Using Publication and Citation Analysis

1. Consider whether available data can address the question.
2. Choose publication types, field definitions, and years of data.
3. Decide on whole or fractional counting.
4. Judge whether data require editing to remove “artifacts”.
5. Compare like with like.
6. Use relative measures, not just absolute counts.
7. Obtain multiple measures.
8. Recognize the skewed nature of citation data.
9. Confirm that the data collected are relevant to the question.
10. Ask whether the results are reasonable.

And, above all, present the results openly and honestly.
Thank You!

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