Relevant metrics for measuring research impact

Christina Locke, PhD
Project Coordinator, Beyond the Academy
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Overview

Section I: Overview of academic metrics & status of current literature
➤ Group discussion

Section II: Example frameworks
➤ Group discussion
Section I: Overview of metrics used in academia and current status of literature
We are defining impact as scholarship or leadership that advances sustainability in a diverse and changing world.
Why measure research impact?

Sustainability depends on evaluation. How do we know if sustainability solutions are working if we don’t assess them?
## Metrics measure... what exactly?

<table>
<thead>
<tr>
<th>Metric</th>
<th>Proxy measure of</th>
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<tbody>
<tr>
<td>Publication counts</td>
<td>Productivity</td>
</tr>
<tr>
<td>Citation indices (e.g. h-index)</td>
<td>Scholarly influence (positive or negative)</td>
</tr>
<tr>
<td>Journal impact factors</td>
<td>Prestige</td>
</tr>
<tr>
<td>Grant income</td>
<td>Research environment</td>
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<tr>
<td>Graduate student degrees awarded</td>
<td>Research environment</td>
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Measuring real-world impact requires better tools.
Attempts at measuring external influence

• Web-based metrics
  • “Altmetrics” - social media focused
  • Weaknesses: can be easily gamed, measure attention rather than influence

• Number and type of “occasions of influence”
  • Track communications with businesses, government agencies, NGOs
  • Potential to connect these encounters with eventual policy change
What about qualitative assessment of research impact?
Expert panel review

Researchers are asked to submit narratives or case studies of their work, and draw connections to outcomes and impacts.

Examples:
• Manuscript review
• Grant review
• Tenure review process
• Research Excellence Framework (REF) national assessment
• “Rule of 5” impact statements
Expert panel review - strengths

• Nuanced. Social/public impact can be assessed holistically

• Flexible.
  • Foundational knowledge differs by discipline.
  • Organization can decide to emphasize real-world impact

• Can capture delayed impacts
Expert panel review - weaknesses

- Slow and expensive (though most costs are hidden)
- Subject to biases of reviewers
- Lack of transparency
- Incentivizes researchers to “reach” for causation
“[Expert] review is not perfect, **but it is the least worst form of academic governance we have**, and should continue to be the primary basis for assessing research papers, proposals and individuals, and for national assessments like the REF.”

“However, carefully selected and applied quantitative indicators can be a useful complement to other forms of decision making.”

“Metrics should support, not supplant, expert judgement.”
“Baskets” of indicators (qualitative and quantitative) provide the best way forward.
CAUTION
METRICS
IN PROGRESS
San Francisco Declaration on Research Assessment
- sfdora.org -

Recommendations for publishers, institutions, funding orgs, and researchers. Primary themes:

• Eliminate the use of journal-based metrics,
• Assess research on its own merits rather than on the basis of the journal,
• Capitalize on the opportunities provided by online publication.
1) Quantitative evaluation should support qualitative, expert assessment.

2) Measure performance against the research missions of the institution, group or researcher.

3) Protect excellence in locally relevant research.

4) Keep data collection and analytical processes open, transparent and simple.

5) Allow those evaluated to verify data and analysis.

6) Account for variation by field in publication and citation practices.

7) Base assessment of individual researchers on a qualitative judgement of their portfolio.

8) Avoid misplaced concreteness and false precision.

9) Recognize the systemic effects of assessment and indicators.

10) Scrutinize indicators regularly and update them.
International School on Research Impact Assessment (ISRIA) guidelines, 2018

Section I take-home messages

• It remains difficult to establish cause and effect of research impact, but qualitative research narratives can be compelling

• Journal impact factors should not be used to evaluate research

• Other quantitative measures can be useful, but should support qualitative, expert assessment.

• Plenty of guidelines out there for responsible use of metrics
  • Declaration on Research Assessment (DORA) – sfdora.org
  • The Leiden Manifesto - leidenmanifesto.org
  • ISRIA guidelines - www.theinternationalschoolonria.com
  • The Metric Tide - responsiblemetrics.org
Section II: Example frameworks

1. Revisit ISRIA guidelines for research impact assessment
2. Impact Survey
3. Impact Compass
Guidelines can apply to tenure review processes, grant and manuscript review, assessment of research case studies.

Adam et al. 2018. ISRIA statement: ten-point guidelines for an effective process of research impact assessment.
What is the logic model behind the research? How does the research lead to impacts?
“Impact Framework” used by the Commonwealth Scientific & Industrial Research Organisation (Australia)

Figure 1. The logic model of the Payback Framework


Used to measure UK health impacts
Responsible use of indicators and metrics to illustrate impact

Examples...

Impact survey (London School of Economics)

- Researchers keep an “impact file” to document occasions of influence
- Can be reported to departments or standardized across departments
- Can track impact trends over time

https://blogs.lse.ac.uk/impactofsocialsciences/the-handbook/chapter-9-expanding-external-research-impacts/
Impact Compass (Stanford Business)

Designed for business students deciding among companies to work for

https://www.gsb.stanford.edu/faculty-research/centers-initiatives/csi/impact-compass
Impact Compass (Stanford Business)

Can be adapted to assess research impact, or researcher, department, or institution performance

https://www.gsb.stanford.edu/faculty-research/centers-initiatives/csi/impact-compass
Impact Compass (Stanford Business)

Three Big No’s:

• Proven failure
• Negative social outcome
• Unethical behavior

https://www.gsb.stanford.edu/faculty-research/centers-initiatives/csi/impact-compass
Impact Compass

• 6-dimensions, scaled 1-3
• Points are multiplied to calculate final score (min score=1, max score=729)
• “A lower impact potential score doesn’t necessarily indicate a less worthy opportunity.”
• Flexible – can be adapted to assess individuals, departments, institutions.
Section II take-home messages

- Literature on research impact assessment is maturing.
- Conceptual frameworks / logic models for tying impacts to research in use by many organizations across the world.
- Appropriate indicators and metrics should be chosen to suit the context and purpose of research.
- Useful metric frameworks from non-academic sectors can be adapted to research contexts.
*GROUP DISCUSSION*
References


