**A Workbook for**

**A Half-Day Workshop**

**Identifying & Communicating the**

**Value of Academic Libraries**

**American Library Association**

**Annual Conference, Anaheim, California**

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Organized by

****

Presented by

**Joe Matthews**

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**Introduction**

**Definitions of Value**

Its own philosophical discipline – *axiology* or Value Theory

* A noun
  + Exchange for or equivalence
  + Monetary or material worth
  + Usefulness, utility
  + Principle, standard, or quality
  + Toll, cost or price
  + Darkness or lightness of color
* A verb
  + Estimate the worth of something (appraise)
  + Regard highly (esteem)
  + Assign a value to something

Other definitions depending on the field

Qualify other terms

**Adam Smith**

* Value-in-exchange

The price paid is the accepted indicator of value

* Value-in-use or “utility theory”

Benefits to the user define the value (of information)

* + *Normative value* – models to assess risk in decision making
  + *Realistic value* – before and after consequences of information on the performance of decision makers
  + *Perceived value* – Users can recognize (and articulate) the direct and intangible values of information

Individuals determine or attribute value

Definitions of Information

1. Information as subjective knowledge
2. Information as useful data
3. Information as a resource
4. Information as a commodity
5. Information as a constitutive force in society[[1]](#endnote-1)

Information may, or may not, reduce uncertainty[[2]](#endnote-2)

**Quality of information**

This fast food approach to information consumption drives librarians crazy. “Our information is healthier and tastes better too” they shout. But nobody listens. We’re too busy Googling.

~ Peter Morville

Convenience trumps everything!

Herb Simon Satisficing[[3]](#endnote-3) Good enough

Different conceptions of information

* *Epistemic information* – within the context of human knowledge and understanding
* *Systemic information* – information as a part of transmission – Shannon-Weaver model of communication

Key characteristics of information[[4]](#endnote-4)

|  |  |
| --- | --- |
| Uncertainty | Knowledge |
| Ambiguity | Indeterminacy |
| Redundancy | System dependency |
| Sharing | Timeliness |
| Compression | Presentation |
| Stability | Multiple life cycles |
| Leakability | Substitutability |

**Value of Information**

Information needs an expected value-in-use to arouse the interest of the user.

Information in a library’s collection represents a “*potential value*” until used.

The collection also represents a “*future value*” since it will be available for future generations of students, faculty, and researchers.

The value of the local collection is, however, declining each year (dramatically)

We are not talking about insurance value or replacement value.

Historically, information has been embedded in physical modes of delivery.[[5]](#endnote-5)

* Reach
* Richness
  + Bandwidth
  + Degree of Customization
  + Amount of Interactivity

*The Internet changes everything!*

**Performance Measures**

Richard Orr’s Evaluation Model[[6]](#endnote-6)

Impact or Effect

Utilization

Resources

Capability

Input Process Output Outcomes

Outcomes accrue first to the individual and then to the organization and/or society at large. Impact is sometimes called “Outcome-based Evaluation (OBE).



Astin’s Input-Environment-Output Model[[7]](#endnote-7)

Meta-analysis of 109 higher education studies showed that for:[[8]](#endnote-8)

*Entering student characteristics* – Socioeconomic status (SES), high school GPA, and ACT/SAT are the best predictors of student success

*Psychosocial and study skill factors* – Academic goals, academic self-efficacy, and academic-related skills are the best predictors of college retention. In addition, social support and social engagement are good predictors of college retention. Financial support and institutional selectivity are correlated with retention.

Achievement motivation is the strongest predictor for GPA.

Inheritance x

Accumulated

Experience

Abstract,

Process

Oriented

***Intelligence***

General Fluid Crystallized

***General Reasoning***

Verbal Quantitative Spatial

Example: Graduate Record Examination

***Broad Abilities***

Reasoning Critical Thinking Problem Solving

Decision Making Communicating

In Broad Domains

Disciplines - Humanities, Social Services, Sciences

And Responsibility – Personal, Social, Moral, and Civic

Example: Collegiate Learning Assessment

Concrete,

Content-

Oriented

***Knowledge, Understanding, and Reasoning***

In Major Fields and Professions (Business, Law, Medicine)

Example: ETS’s Major Field Tests

Direct

Experience

Framework for Student Learning Outcomes[[9]](#endnote-9)

**Challenges with Performance Measures**

1. Lack of consensus about what should be measured and how
2. Lack of understanding of performance measurement and metrics
3. Organizational structural issues
4. Lack of precision in measuring performance, and
5. Alignment issues
6. Determining the “bottom line” is too far away
7. Majority of stakeholders are too far away
8. Library staff find it difficult to see the “big” picture

And the survey said? Two-thirds of managers who are responsible for approving library budgets – no idea of value of the library[[10]](#endnote-10)

Mooers’ Law – “An information retrieval systems will tend not to be used whenever it is more painful and troublesome for a customer to have information than for him not to have it.”[[11]](#endnote-11)

S. R. Ranganathan’s Fourth Law of Library Science - “Save the time of the reader.”[[12]](#endnote-12)

Remember: Universities provide **private** goods & services (exchange value)

Libraries provide **public** goods & service – resources used without

any exchange.

Robert Taylor’s Criteria for judging value of an information service[[13]](#endnote-13)

|  |  |
| --- | --- |
| ***Customer Criterion*** | ***Value Added by the Service*** |
| Ease of use | Browsing, formatting, mediation service, orientation service, ordering, physical accessibility |
| Noise reduction | Access (item identification, subject description, subject summary), linkage, precision, selectivity |
| Quality | Accuracy, comprehensiveness, currency, reliability, validity |
| Adaptability | Closeness to problem, flexibility, simplicity, stimulatory |
| Time savings | Response speed |
| Cost savings | Cost savings |

“If you live by the numbers, you die by the numbers.”[[14]](#endnote-14)

**Calls for accountability and transparency**

Key Question – It is not how much an information resource and/or service is used, but rather what is the impact or benefit of the information service in the life of the library customer.

Key Insight - Value is determined from the perspective of the user.

Carol Tenopir and Don King[[15]](#endnote-15)

1. Implicit measures that imply value, but do not directly measure value
2. Explicit measures that directly describe purchase or use values.

Two approaches or frameworks for valuation studies:

* Marketing framework sees valuation as a communication process between a library and its stakeholders that will affect the future of the library
* Evaluation framework treats valuation as an evaluation process with the results used for a specific purpose

Levels of Assessment

* Individual student
* Course
* Department/Program
* College or University

**Types of Measures**

* Direct
  + Provide tangible, visible and self-explanatory evidence of what students have & have not learned
* Indirect
  + Capture students’ perceptions of their knowledge & skills; supplement direct measures

Explicit or implied measures, formative & summative measures

**Qualitative Assessment**

* Provides in-depth understanding of user responses and interactions
* Represents part of a long-term strategy of formative evaluative

**Quantitative Assessment**

* Conduct analyses to determine library impacts on academic performance, retention rates
* Describe retention rates and GPAs in defined populations over semesters and users
* Compare users & non-users of library services while adjusting for academic preparation and background differences
* Conduct quasi-experimental designs employing multivariate analysis of covariance & hierarchical regression techniques

**Triangulate**

ACRL Standards for Libraries in Higher Education

“Define, develop, and measure outcomes that contribute to institutional effectiveness and apply findings for purposes of continuous improvement.”

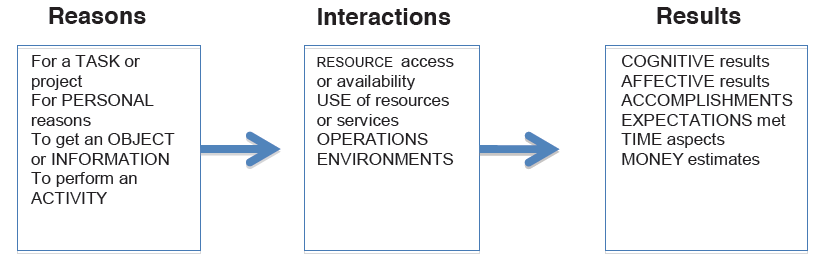
**Perspectives on Value**



**Personal Perspective**

**Value of a Library**

Tefko Saracevic and Paul Kantor[[16]](#endnote-16)



**Impact categories**

1. **Cognitive results**. Use of the library may have an impact in the mind of the user. “What was learned?”
2. **Affective results**. Use of the library may have an emotional impact on the user.
3. **Meeting expectations**. Users may be getting what they needed, sought, or expected; be getting too much; be getting nothing
4. **Accomplishments** in relation to tasks
5. **Time aspects**. Information provided by a library may lead to saving time
6. **Money aspects**. Using the library may result in saving money or generating new revenues.

Gates Foundation Generic Learning Outcomes

|  |  |
| --- | --- |
| **Knowledge & Understanding**   * Knowing what or about something * Learning facts or information * Making sense of something * Deepening understanding * Making links & relationships between things | **Skills**   * Knowing how to do something * Being able to do new things * Intellectual skills * Information management skills * Social skills * Communication skills * Physical skills |
| **Attitudes & Values**   * Feelings * Perceptions * Self-esteem * Attitudes towards others * Increased capacity for tolerance * Empathy * Increased motivation * Attitudes towards an organization * Attitudes related to an experience | **Enjoyment, Inspiration, Creativity**   * Having fun * Being surprised * Innovative thoughts * Creativity * Exploration, experimentation and making * Being inspired |
| **Activity, Behavior, Progression**   * What people do * What people intend to do * What people have done * Reported or observed actions * A change in the way people manage their lives |  |

**Organizational Perspective**

**Assessing University Student Achievement**

**Direct measures**

* Capstone experience
* Use of a portfolio
* A standardized exam (e.g., the Collegiate Learning Assessment).

Derek Rodriquez Understanding Library Impacts – rubric[[17]](#endnote-17)

**Indirect measures**

* Grade point average
* Student retention rates
* Collegiate experience surveys - NSSE
* Success in graduate school exams
* Graduate student publications
* Fellowships
* Post-doctorates
* Time to first job
* Salary of first job
* And so forth

**Assessment of Higher Ed**

NSSE[[18]](#endnote-18)

* + Level of academic challenge
  + Active & collaborative learning
  + Student-Faculty interaction
  + Enriching educational experiences
  + Supportive campus environment

NSSE data plus CLA data[[19]](#endnote-19) *Academically Adrift*

* Gains in student performance are quite low – almost half showed no improvement
* Individual learning is characterized by persistence
* Notable variation within and across institutions

Is the library used? What is the impact of the library?

Bibliographic instruction – focus on the means & not the end

Information Literacy - library-focused assessment

Issues: Scalability

Real long-term impact is unknown Kuh & Gonyea 2003[[20]](#endnote-20)

**Academic Organizational Value[[21]](#endnote-21)**

|  |  |  |
| --- | --- | --- |
| ***Student*** | ***Faculty*** | ***University*** |
| * Student enrollment * Student retention & graduation * Student success * Student achievement * Student learning * Student experience, attitude & perception of quality | * Faculty research productivity * Faculty grants * Faculty teaching | * Institutional reputation & prestige |

**Student Enrollment**

One study suggests that the library is the second most important feature on campus when students (and their parents) make decisions about where to attend college.[[22]](#endnote-22)

**Student Learning - Grade Point Average**

Entering student characteristics Acculturation

Technology & bureaucracy are the biggest problems they face

In England, the *Library Impact Data Project[[23]](#endnote-23)*

8 Universities analyzing data from the last 6 years

* Visit library buildings
* Borrow materials
* Download eResources

Results of the Library Impact Data Project show

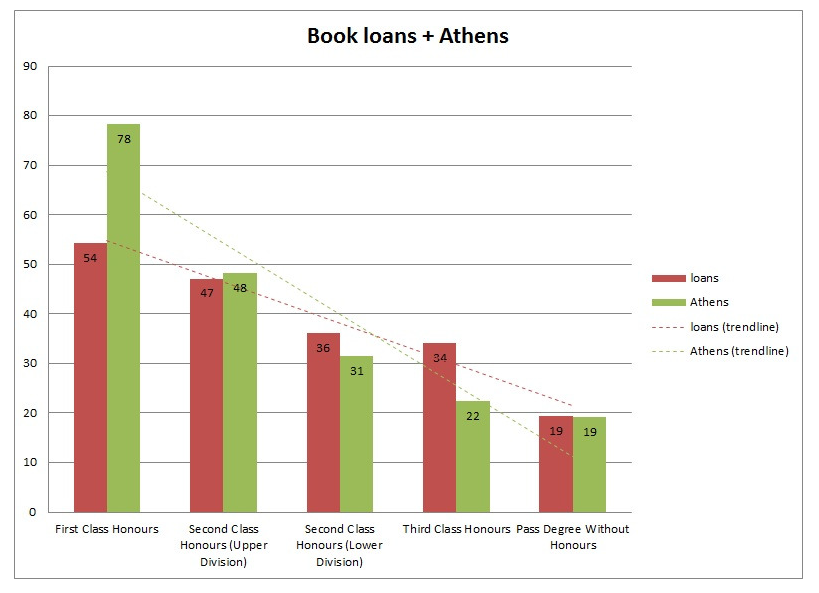
* A correlation between borrowing materials and downloading eResources and a student’s grade point average.
* About half of all undergraduate students did not use ANY library service
* Largest group of library non-users are part-time and distance students
* Some library non-users achieve high GPAs
* Majority of library non-users did poorly – low GPAs

Remember: Correlation does not = Causality

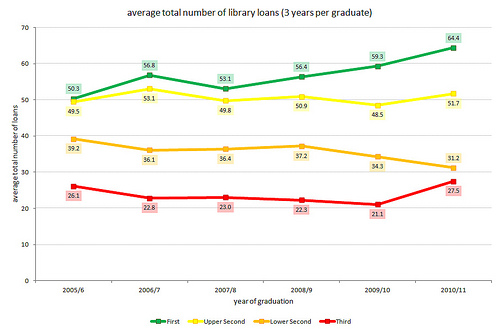
See <http://library.hud.ac.uk/blogs/projects/lidp/>

See also, the JISC EBEAM Project – Evaluating the Benefits of Electronic Assessment Management <http://library.hud.ac.uk/blogs/projects/ebeam/>

See also, the JISC Copac Activity Data Project – Sharing and reusing HE library circulation activity data <http://copac.ac.uk/innovations/activity-data/?tag=copacad>



Note: Athens – online eResources



**Grade Point Average**

In the UK, 10% of students who gained a 1st logged in more than 180 times

70% who gained a 3rd logged in 20 times or less

15% of student who gained a 1st never borrowed a book

34% of students who gained a 3rd never borrowed a book

In Australia, the University of Wollongong[[24]](#endnote-24)

Foreign students

Curtin University – sample of 4,661 first-year students[[25]](#endnote-25)

2/3rds had not borrowed an item from the library in their first semester

Nearly 80% had used electronic resources

Retained students showed higher levels of use of eResources

In Hong Kong, the Hong Kong Baptist University library[[26]](#endnote-26)

Good support for use of the library and GPA

Georgia State University Use of library increases, GPA and retention rates also increase[[27]](#endnote-27)

**University of Minnesota**

Gym Bags and Mortarboards[[28]](#endnote-28)

Library study

<http://blog.lib.umn.edu/ldss/2012/04/library-technology-conference-presentation.html>

5,368 first-year non-transfer students in the sample. 71% had used the library at least once. As types of library use increase GPA also increases. Regression analysis.

13 measures of library use.

Use library one time, GPA increase .23 E.g., GPA goes from 3.00 to 3.23.

Use library more, 2.54 times more likely to re-enroll

Course integrated instruction – GPA decreases .11

*Implication?* Library MUST COMBINE its data with other data from the University in order to prepare an analysis that focuses on outcomes!

The library MUST develop partnerships!

Note that customer satisfaction ratings are NOT an indicator of value.

**Library Instruction**

* Surveys of student opinions & habits
* Assessing student work for specific skills
* Analysis of grade point average
* Mixed results

Hong King Baptist University – Wong and Cmor CR&L Sept 2011

Only 1/4th of 45 sample groups had a positive correlation

University of Wyoming Libraries – 4,489 transcripts[[29]](#endnote-29)

Very weak positive correlation – library instruction and GPA

**Student Retention/Graduation**

Graduation rates for private, non-profit universities is 65 percent, at public institutions it is 56 percent, and at private for-profit institutions it is only 28 percent.

Why important: greater revenues, which mean lower costs per degree conferred

Tinto’s Model of Student Integration

Bean’s Model of Student Attrition

Early studies – weak support for use of library and retention

Library orientations have weak support for student retention

Libraries that spend more on materials and on staff have greater retention rates

Total library expenditures may be related to higher graduation rates

Retention strategies focus on people – not physical resources

* Curricular and behavioral integration
* Frequent contact with faculty (and other people on campus)
* Accessible and responsive staff
* Convenient and responsive libraries
* High impact educational experiences

Calls for librarians to increase contact with students

Potential to collaborate with Student Affairs

Challenge: How to scale programs?

**Student Engagement/Experiences**

Surveys

* National Survey of Student Engagement (NSSE)
* Community College Survey of Student Engagement (CCSSE)
* Beginning College Survey of Student Engagement (BCSSE)
* Faculty Survey of Student Engagement (FSSE)

Student self-report their experiences and over-report their experiences

Libraries can add questions to national surveys

Analysis of NSSE data from 1984 to 2002 (N= 380,000 respondents)[[30]](#endnote-30)

More than 50% of the respondents never visited the library or used a library service during their undergraduate career

* Academic libraries and their services at small, academically challenging liberal arts colleges are strongly correlated with other educationally purposeful activities (note that such institutions are usually residential in nature, the library is closely located to student residences making access easier)
* Library use is less frequent in larger doctoral/research-intensive – perhaps due to the readily availability of other alternatives
* Individual students who frequently use library resources are more likely to work harder to meet faculty academic expectations
* Library experiences do not lead to gains in information literacy
* Library experiences do not lead to gains in student satisfaction
* Library experiences do not lead to what students gain overall from college.

Goal: Gain insight into the relationship between engagement, library outcomes, and student success.

**Faculty Teaching**

Partner with faculty to integrate information literacy in their classes

* Develop and implement new and/or improve curricula
* Improve faculty research productivity
* Save time in preparing for classes (Simmel 2007, Dickenson 2006)

**Faculty Research**

Principal contributions are collections but that is shifting as faculty increasingly relies on online resources (Ithaka’s studies).

Weak support for: size of collections, reference queries are related to faculty productivity. Personal characteristics of the researcher are more important than institutional characteristics.

Faculty productivity and award recognition related to the amount of time reading (Tenopir and King). Library collections (physical and virtual) provide convenience and ease of access, which saves the time of the faculty member/researcher.

Yet, the library is disappearing in the minds of the faculty

**Institutional Ranking**

Institutional rank is not related to quality of education. Yet, changes in reputation rankings affects student & faculty recruitment.

For example, no link between NSSE and US News and World Report rankings

Hard to isolate the impact of library services from other institutional activities when analyzing institutional rankings. Universities that spend more per student are better in many areas and no one area can take “credit.”

Total library expenditures are related to US News and World Report Peer Assessment Score.[[31]](#endnote-31)

In England, the Research Assessment Exercise (RAE) – the best institutions have both the best RAE ratings and the best libraries.

Large library collections contribute (20 to 40%) to the prestige of the university (Liu 2003, 2009).

**Financial Value**

Three possible economic measures

* **Economic Value**
* **Economic Activity**
* **Economic Benefits**

1. **Direct Use Benefits** –a tangible benefit.
2. **Indirect Use Benefits** or economic impact
3. **Non-use Benefits**.

**Economic Value**

A survey can be used to ask people to estimate economic value

Method: Contingent Valuation (CV)

* Willingness-to-Pay (WTP)
* Willingness-to-Accept (WTA)

Methodological concerns: what people are willing to pay is dependent on –

Whose money (yours or other peoples), your ability to pay, what you are valuing (tangible or intangible good, such as information)

WTP and WTA produce widely different results – WTA estimates are greater than WTP – surprise!

Consumer Surplus is the value that consumers place on the consumption of a good or service in excess of what they must pay for it; value versus what they pay in taxes.

**Economic Activity**

Library provides real economic impact on the local economy.

The library purchases goods, pays salaries and benefits.

The “multiplier effect” can range from 2 to 7. Sometimes data is input into an Input-Output Model (such as Regional Input-Output Modeling System II or the Regional Economic Models [REMI]).

Library as “destination”[[32]](#endnote-32)

Seattle Public Library attracts out-of-town visitors who spent $16 million annually in the downtown area – hotels, restaurants, car rentals, ferries and so forth – which leads to an increase in taxes for the local government as well as impact on local jobs

**Economic Benefits**

**Direct Use Benefits**.

* Cost savings from avoiding the purchase of materials.
* Free or low-cost access to computers, photocopiers, audio and video equipment, computer software, meeting rooms, programs, instructional classes, and so forth.
* Access to trained professionals for assistance in finding quality information.

**What is Return on Investment?**

In simple terms, a return on investment analysis, often times called a cost-benefit analysis, seeks to estimate and compare costs and benefits of an undertaking.

Cost-benefit analysis

* Maximize benefits for given costs
* Minimize costs for a given level of benefits
* Maximize the ratio of benefits over costs
* Maximize the net benefits (present value of benefits minus the present value of costs)
* Maximize the internal rate of return on the investment.

Typically a ROI study involves a large survey – which means high costs

Strengths and weaknesses associated with ROI studies:[[33]](#endnote-33)

*Strengths*

* The average return on investment, $4 to $6 of benefits for every dollar expended, is consistent across all of these studies.
* If use of a library is “above average,” then the resulting ROI is higher.
* There is wide variation in establishing the value of each library service.

*Weaknesses*

* The use of different methodologies results in varying conclusions.
* Assigning a value for people’s time in a public or academic library setting is problematical.
* Attempting to compare ROI studies across libraries is a true “apples and oranges” exercise.
* It is difficult to validate results of intangible services valuation.
* Policy-makers and financial decision-makers are uncertain of how to use the study results.

**ROI in an Academic Environment**

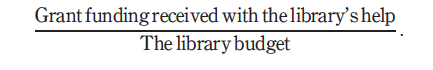
University of Illinois at Urbana-Champaign[[34]](#endnote-34)

Connected citations to resources in the library’s collection to successful grant proposals and the resulting grant income. Results: 4.38:1 ROI

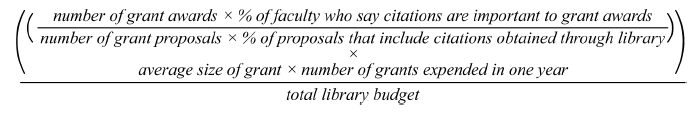
Process:

* Survey of faculty members – 2,000 – only 16% response rate
* Data collection (covering a ten year period)
* Interviews with senior faculty and administrators

In simple terms the formula is



The actual formula



8 other universities located in different countries[[35]](#endnote-35)

Result: ROI ranged from 0.27:1 to 15.54:1

Variability in grant funding, characteristics of the university, country of study

Analysis based on the assumption that the best proposals (those with citations) are winning the competitive grant application process.

Bruce Kingma – LibValue Syracuse University Library ROI 4.49:1

LibValue Project University of Tennessee

* Comprehensive assessment of the library
* ROI of the journal collection & readership
* ROI for support of teaching & learning
* ROI of digitized special collections
* ROI of eBooks
* Value of library commons

Project Web site <http://libvalue.cci.utk.edu/>

James Neal, University Librarian at Columbia University, suggested that ROI in academic libraries are a “miscalculated, defensive and risky strategy.”[[36]](#endnote-36)

Library journal collections (physical and electronic) had an ROI of 2.9:1 (King et al 2004)

A similar study reported an ROI of 5.35:1 (Melo and Pires 2009)

Gaining access to information does always lead to positive results

In the U.S., there are 2.4 million patent applications for patents that already exist

2.4 million times $700 per application = $1.7 billion spent on applications that could have been avoided.[[37]](#endnote-37) This does not count the research dollars to come up with the patent application.

Costs of not finding information are high[[38]](#endnote-38)

* Time spent on searching (and not finding) is $6 million/year
* Cost of reworking information is an additional $12 million/year
* Associated opportunity cost is $15 million/year

Johns Hopkins University research[[39]](#endnote-39)

Martyn found that 0.9 percent of all R&D funding is spent unnecessarily due to published information not being found.[[40]](#endnote-40)

**Indirect Use Benefits**

Impracticable-to-calculate benefits

* Leisure enjoyment
* Literacy encouragement
* Library as place
* Attending a program
* . . . .

Method: Most often contingent valuation is used

Another approach is use a Social Return on Investment model – non-profit settings

Tuan identified eight integrated cost approaches to measuring and/or estimating social value.[[41]](#endnote-41)

1. Cost-Effectiveness Analysis (CEA)
2. Cost-Benefit Analysis (CBA)
3. REDF SROI – SROI Framework
4. Robin Hood Benefit-Cost Ratio
5. Acumen Best Available Charitable Option (BACO) ratio
6. Hewlett Expected Return (ER)
7. Center for High Impact Philanthropy (CHIP) Cost per Impact
8. Foundation Investment Bubble Chart

Expected Return = (Outcome or Benefit X Probability of Success)

Cost

The eight approaches have different answers to these important questions:

* How are outcomes or benefits estimated? Over what timeframe?
* How are outcomes or benefits monetized?
* How are costs calculated?
* How are risks and uncertainties accounted for?

Challenges associated with the use of SROI:

* The inconsistent use of language
* The lack of common measures in the social sector
* The lack of quality data on social impacts, outcomes, outposts, and cost
* The lack of incentives for transparency
* Unintended consequences
* Inadequate utilization
* The cost of measurement.

**Non-Use Benefits**

Also called existence value, bequest value, vicarious consumption, prestige value, education value, option value, and several others

Non-use Benefit types:

* To an individual at some point in the future
* To others
  + Now
  + In the future

One large-scale survey in Norway found:[[42]](#endnote-42)

* 40% Direct & indirect use value
* 20% For the respondent to use in the future
* 40% For others to use – now or in the future

Total Value = Direct Use + Indirect Use + Non-use benefits

**Library assets**

Tangible Assets The collections

Intangible Assets[[43]](#endnote-43)

* Human capital – staff
* Information capital – ILS, document management system, repository, networks, IT infrastructure, eResources
* Organizational capital – culture, leadership, alignment, teamwork

**Assessment**

**National Institute for Learning Outcomes Assessment** (NILOA)

Transparency Framework

<http://www.learningoutcomeassessment.org/TransparencyFramework.htm>

**Good Assessment**

**What We Need**

**Collaboration**

Combine library data with student demographic and performance data

**Next Steps**

**Layers of Data**

Other University-wide data

Performance data

Demographic data

Library data

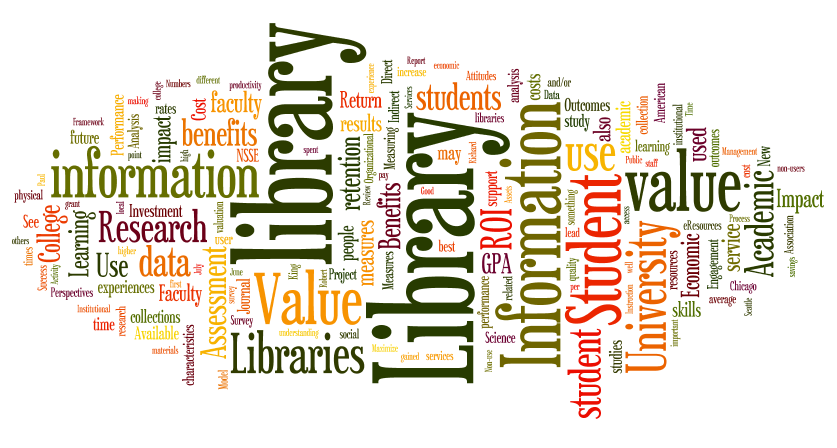
**Privacy concerns**



Connect, Collaborate, and Communicate[[44]](#endnote-44)

So, for your library

* How *integral* is it to the academy?
* How well it supports *learning and teaching*?
* How well it supports *research*?



1. Jennifer Rowley. Promotion and Marketing Communications in the Information Marketplace. *Library Review*, 47 (8), 1998, 383-388. [↑](#endnote-ref-1)
2. Michael Buckland. Information as Thing. *Journal of the American Society for Information Science*, 42 (5), 1991, 351-360. [↑](#endnote-ref-2)
3. Herbert Simon. *Models of Man*. New York: Wiley, 1957. [↑](#endnote-ref-3)
4. Douglas Badenoch, Christine Reid, Paul Burton, Forbes Gibb, and Charles Oppenheim. The Value of Information, in Mary Feeney and Maureen Grieves (Eds.). *The Value and Impact of Information*. London: Bowker Saur, 1994, 9-78. [↑](#endnote-ref-4)
5. Philip Evans and Thomas Wurster. Strategy and the New Economics of Information. *Harvard Business Review*, September-October 1997, 71-82. [↑](#endnote-ref-5)
6. Richard Orr. Measuring the Goodness of Library Services. *Journal of Documentation*, 29 (3), 1973, 315-352. [↑](#endnote-ref-6)
7. Alexander Astin. *Achieving Education Excellence: A Critical Assessment of Priorities and Practices in Higher Education*. San Francisco, CA: Jossey-Bass, 1985. [↑](#endnote-ref-7)
8. Steven Robbins et al. Do Psychosocial and Study Skill Factors Predict College Outcomes?: A Meta-Analysis. *Psychological Bulletin*, 130 (2), March 2004, 261-288. [↑](#endnote-ref-8)
9. Richard Shavelson. *Measuring College Learning Responsibility: Accountability in a New Era*. Stanford, CA: Stanford University Press, 2010, pg 13. [↑](#endnote-ref-9)
10. James Matrazzo and Lawrence Prusak. Valuing Corporate Libraries. *Special Libraries*, 81 (2), 1990, 102-110. [↑](#endnote-ref-10)
11. Calvin Mooers. Mooers’ Law or, Why Some Retrieval Systems Are Used and Others Are Not. *American Documentation*, 11, 1960, 201-209. [↑](#endnote-ref-11)
12. S. R. Ranganathan. *The Five Laws of Library Science*. New Delhi, India: Ess Ess Publications, 1931. [↑](#endnote-ref-12)
13. Robert Taylor. *Value-added Processes in Information Systems*. Norwood, NJ: Ablex Publishing, 1986. [↑](#endnote-ref-13)
14. Allan Pratt and Ellen Altman. Live by the Numbers, Die by the Numbers. *Library Journal,* 122 (7), April 15, 1997, 48-49. [↑](#endnote-ref-14)
15. Allan Pratt and Ellen Altman. Live by the Numbers, Die by the Numbers. *Library Journal,* 122 (7), April 15, 1997, 48-49. [↑](#endnote-ref-15)
16. Tefko Saracevic and Paul Kantor. Studying the Value of Library and Information Services. Part I. Establishing a Theoretical Framework. *The Journal of the American Society for Information Science,* 48 (6), June 1997a, 527-542.

    Tefko Saracevic and Paul Kantor. Studying the Value of Library and Information Services. Part II. Methodology and Taxonomy. *The Journal of the American Society for Information Science*, 48 (6), June 1997b, 543-563. [↑](#endnote-ref-16)
17. Derek Rodriquez. Answering Questions about Library Impact on Student Learning. *In the Library with the Lead Pipe blog*. Aril 4, 2012. Available at <http://www.inthelibrarywiththeleadpipe.org/2012/answering-questions-about-library-impact-on-student-learning/> [↑](#endnote-ref-17)
18. Pascarella, Seifert, and Blaich. How Effective are the NSSE Benchmarks in Predicting Important Educational Outcomes? *Change*, January 2010. [↑](#endnote-ref-18)
19. Richard Arum and Josipa Roksa. *Academically Adrift: Limited Learning on College Campuses*. Chicago: University of Chicago Press, 2011. [↑](#endnote-ref-19)
20. Kuh & Gonyea. The role of the academic library in promoting student engagement in learning. *College & Research Libraries*, 64 (7), July 2003, 256-82.

    300,000 student respondents [↑](#endnote-ref-20)
21. Megan Oakleaf. *The Value of Academic Libraries: A Comprehensive Research Review and Report*. Chicago: Association of College & Research Libraries, 2010, p.19. Available at <http://www.acrl.ala.org/value/> [↑](#endnote-ref-21)
22. Gary Reynolds. The Impact of Facilities on Recruitment & Retention of Students. *New Directions for Institutional Research*, 135, Fall 2007. [↑](#endnote-ref-22)
23. Deborah Goodall and David Pattern. Academic Library Non/Low use and Undergraduate Achievement: A Preliminary Report of Research in Progress. *Library Management*, 32 (3), 2011, 159-170.

    See also, Graham Stone, David Pattern and Bryony Ramsden. Looking for the Link Between Library Usage and Student Attainment. *Aridne*, 67, July 2011. [↑](#endnote-ref-23)
24. Margie Jantti and Brian Cox. Capturing Business Intelligence Required for Targeted Marketing, Demonstrating Value, and Driving Process Innovation, in *9th Northumbria International Conference on Performance Measurement in Libraries and Information Services: Proving Value in Challenging Times,* 22-25 August 2011, University of York, in press. [↑](#endnote-ref-24)
25. Haddow, G., & Joseph, J. (2010). Loans, logins, and lasting the course: Academic library use and student retention. *Australian Academic & Research Libraries*, 41(4), 233–244. [↑](#endnote-ref-25)
26. Shun Han Rebekah Wong and T.D. Webb. Uncovering Meaningful Correlation Between Student Academic Performance and Library Material Usage. *College & Research Libraries*, 74 (4), July 2011, 361-70.

    Shun Han Rebekah Wong and Dianne Cmor. Measuring Association Between Library Instruction and Graduation GPA. *College & Research Libraries*, 74 (5), September 2011, 464-473. [↑](#endnote-ref-26)
27. Jones, J. L. Using library swipe-card data to inform decision making. *Georgia Library Quarterly*, 48(2), 2011, 11–13. [↑](#endnote-ref-27)
28. Huesman, Jr., R. L., Brown, A. K., Lee, G., Kellogg, J. P., & Radcliffe, P. M. (2009). Gym Bags and Mortarboards: Is Use of Campus Recreation Facilities Related to Student Success? NASPA Journal, 46(1), 50–71. [↑](#endnote-ref-28)
29. Melissa Bowles-Terry. Library Instruction and Academic Success: A Mixed-Methods Assessment of a Library Instruction Program. *Evidence Based Library and Information Practice,* 7(1), 2012. [↑](#endnote-ref-29)
30. George Kuh and Robert Gonyea. The Role of the Academic Library in Promoting Student Engagement in Leaning. *College & Research Libraries*, July 2003, 256-282. [↑](#endnote-ref-30)
31. Sharon Weiner. The Contribution of the Library to the Reputation of a University. *Journal of Academic Librarianship*, January 2009, 35 (1), 3-13. [↑](#endnote-ref-31)
32. Berk & Associates. *The Seattle Public Library Central Library: Economic Benefits Assessment. The Transformative Power of a Library to Redefine Learning, Community, and Economic Development*. Seattle: Berk & Associates, 2005. [↑](#endnote-ref-32)
33. Joseph Matthews. [What's the Return on ROI? The Benefits and Challenges of Calculating Your Library's Return on Investment](javascript:%20void%200). *Library Leadership & Management,* 25 (1), 2011, 1-14.

    See also, Donald Elliott, Glen Holt, Sterling Hayden and Leslie Holt. *Measuring Your Library’s Value: How to Do a Cost-Benefit Analysis for Your Public Library*. Chicago: American Library Association, 2007. [↑](#endnote-ref-33)
34. Judy Luther. *University Investment in the Library: What’s the Return? A Case Study at the University of Illinois at Urbana-Champaign*. San Diego: Elsevier, 2008. [↑](#endnote-ref-34)
35. Carol Tenopir, Amy Love, Joseph Park, Lei Wu, Bruce Kigma, and Donald King. Return on Investment in Academic Libraries: An International Study of the Value of Research Libraries to the Grants Process. San Diego: Elsevier, 2009. [↑](#endnote-ref-35)
36. James Neal. Stop the Madness: The Insanity of ROI and the Need for New Qualitative Measures of Academic Library Success. *ACRL Conference, March 3-April 2, 2011, Philadelphia, Pennsylvania,* p. 424. Available at <https://www.ala.org/ala/mgrps/divs/acrl/conferences/confsandpreconfs/national/2011/papers/stop_the_madness.pdf> [↑](#endnote-ref-36)
37. Frugal Dad. The Problem with Patents. A blog. January 4, 2012. Available at <http://frugaldad.com/patents/> [↑](#endnote-ref-37)
38. Susan Feldman. The High Cost of Not Finding Information. *KMWorld*, March 1, 2004. Available at <http://www.kmworld.com/articles/readarticle.aspx?articleid=9534> [↑](#endnote-ref-38)
39. Eva Perkins. Johns Hopkins’ Tragedy: Could Librarians Have Prevented a Death? *Information Today*, August 7, 2001. [↑](#endnote-ref-39)
40. John Martyn. Unintentional Duplication of Research. *New Scientist*, 21 (377), 6 February 1964, 338.

    See also, John Martyn. *Literature Searching Habits and Attitudes of Research Scientists*. British Library R&D Paper 14. London: Polytechnic of Central London, Information Research Group, 1987. [↑](#endnote-ref-40)
41. Melinda Tuan. *Impact Planning and Improvement Measuring and/or Estimating Social Value Creation: Insights into Eight Integrated Cost Approaches*. Seattle, WA: Bill & Melinda Gates Foundation, 2008. [↑](#endnote-ref-41)
42. Svanhild Aabo and Jon Strand. Public Library Valuation, Nonuse Values, and Altruistic Motivations. *Library & Information Science Research*, 26, 2004, 351-372. [↑](#endnote-ref-42)
43. Robert Kaplan and David Norton. Measuring the Strategic Readiness of Intangible Assets. *Harvard Business Review*, February 2004, 52-63.

    See also, Petros Kostagiolas and Stefanos Asonitis. Intangible Assets for Academic Libraries. *Library Management*, 30 (6/7), 2009, 419-429.

    As well as, Larry Nash White. A Kaleidoscope of Possibilities: Strategies for Assessing Human Capital in Libraries. *The Bottom Line*, 20 (3), 2007, 109-115. [↑](#endnote-ref-43)
44. Karen Brown and Kara Malenfant. *Connect, Collaborate, and Communicate.: A Report from the Value of Academic Libraries Summits*. Chicago: Association of College & Research Libraries, June 2012. Available at <http://www.acrl.ala.org/value/> [↑](#endnote-ref-44)