

Library valuation studies and return of investment

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Introduction

In a meta-analytic review of research literature reporting from contingent valuation of cultural resources, Noonan (2003) identified 72 original studies covering the topics archeology, the arts, broadcast and media, historical sites, heritage, libraries, museums, sports, and theatre. Only three of these studies dealt with libraries. However, the field of library valuation research has been fast-growing over the last decade. As recipients of a high proportion of the public funds for cultural activities, public libraries meet demands for more accountability. Academic libraries, too, meet similar types of demands, being asked for performance measurement, cost justifications, and return on investment from the administration of their university or college. These demands are strengthening due to the increasing economic pressure on the public sector of which the vast majority of libraries is an integral part.

In 2007, two comprehensive reviews of the literature reporting from library valuation were published, one in the USA analyzing 17 American public library studies and the other in Sweden covering 43 studies world wide, including all types of libraries, both public, school, academic, special and national libraries (Wagman, 2007). Library economic research is thus shown to be expanding. However, the field of library valuation is still young. Studies differ in methods, aim, and scope. Lack of consistency in methodologies and applications limits the ability to replicate research, compare valuation results, and apply the research findings.

The two meta-analytic reviews of the research literature document that the library valuation field is on its way to generating a critical mass of empirical studies. The focus of this paper is on a subgroup of the library valuation studies, namely the fraction that reports a return on investment ratio (ROI) or a cost-benefit ratio. A majority of all studies reviewed in the two meta-analyses, as many as 34, arrives at a return on investment ratio, communicating that for each dollar invested by public funding the libraries return a value that is substantially higher. The aim of the paper is to look closer at these studies and their valuation results, e.g., the specific monetary amounts reported in these library valuation studies. At this stage of the development of empirical library valuation research, a status report of this subgroup of studies seems useful and may gain some new insights. Tables are produced to give an overview of the variation of the studies by several descriptive variables.

Two meta studies of the field of library valuation

The thorough American review, *Worth Their Weight: An Assessment of the Evolving Field of Library Valuation* (Imholz and Arns, 2007) was carried out by Americans for Libraries Council, involving

experts from within and beyond the library community. Coauthors of the study, Imholz and Arns, point to three salient trends which form the basis for their key findings.

“Our first observation is that over the past decade, public library valuation researchers *have* sought out and adopted valuation methods from the field of economics that allow the library to put a dollar value on its programs and services and show efficient use of tax dollars in cost/benefit terminology. The studies we reviewed clearly demonstrate the field’s growing sophistication, showing advancement from simple questionnaires to complex surveys, and from simple economic cost/benefit assessments to complex economic algorithms and forecasts” (Imholz and Arns, 2007, p. 5).

Their second observation is that the field is moving from mastery of purely economic measures to becoming more concerned about how to incorporate the public library’s more intangible social dividends, and to find new way to express and quantify learning values and cultural benefits. They underscore the need to draw upon education research and social science expertise to be able to expand the value concept to incorporate the complex public library value, and even to redefine monetary value and efficiencies in the context of sustainable, healthy communities. The third observation is that at the current stage of library economic valuation, the systematic growth and development of the field could benefit considerably from formalized forums for sharing of information, datasets, and experimental tools.

Imholdz and Arns (2007, p.15) summarize the economic valuation methodologies used in library valuation. The term “methodology” refers to conceptual frameworks that support specific approaches to data analysis. They find that the public library valuation studies they review rely on two types of methodologies: those that produce estimates of *direct benefits* and *indirect benefits*, respectively.¹ Cost/benefit analysis, contingent valuation and secondary economic impact analysis are methods that are used in the public library valuation studies they have reviewed. The latter use formulas and algorithms for assessing the secondary economic impacts of industries, such as library employees living locally and spending their wages in local businesses in the community thus contributing to the local economy; the diverse library expenditures, etc. These measurements are also considered “indirect” benefits, often found by using modeling software called “input-output” models. Typically, they use data available from the Bureau of Economic Analyses at the U.S. Department of Commerce. Results from both contingent valuation and secondary economic impact analysis are often included in different cost/benefit analyses.

Section II of the American report are made up of 17 study summaries of methods and analysis including scope of the study and applied methodology; results including key findings of the economic analysis; and possible survey questions.

The reviewed library studies in this meticulous report are limited to the United States and they are of public libraries only.

The Swedish review (Wagman, 2007) was initiated by the Swedish Library Association. It aims to give an overview of the international research literature about library valuation. Cost-benefit analyses and economic impact analyses of libraries have mostly been conducted in the U.S.A., Canada, Australia, New Zealand and the U.K, states Wagman based on her brief reviews of 43 studies. This report differentiates between cost/benefit analysis and economic impact analysis. The cost/benefit

¹ These terms correspond with the terms *use value* and *non-use value*, respectively, since the latter provide benefits to other individuals than the library user and to the community.

analyses may use different methods to find the data that represent the benefits of the libraries: market analogy methods, revealed preferences and stated preferences. Economic impact analyses measure spin-off or multiplier effects of library expenditure including maintenance and construction of library buildings, books, equipment, etc., library employee wages used locally, etc.

The report underscores the variation among the 43 library valuation studies. The structure of the reviews is based on library type, starting with public libraries, followed by academic libraries, special libraries, and national libraries. The review ends with two short summaries of impacts of libraries upon i) businesses and industries and ii) local consumption, especially in nearby shopping centres.

Library valuation studies reporting a ROI ratio

The dataset for the analyses in this paper is 34 library valuation studies that report a return on investment ratio (ROI) or a cost-benefit ratio. A much used formulation is to report that the ROI ratio is, \$1:\$4.40, for instance, meaning that for each dollar of taxpayers' money invested in the library, the library returns a value or benefits of \$4.40 to the citizens. Table 1 gives an overall presentation of the studies by year, country, and scope.

Table 1: Published library valuation studies reporting a ROI ratio by year, country, and scope.

Year	No of studies	Country	No of studies	Scope	No of studies
1995	1	United States	28	National	7
1999	1	U.K.	2	State	4
2000	4	Australia	1	Regional	1
2001	2	New Zealand	1	County	6
2002	2	South Korea	1	Individual library	15
2003	1	Norway	1		
2004	3				
2005	5				
2006	12				
2007	2				
2008	1				
Total	34		34		33

The variable 'Year' depicts the publishing year of the library valuation study and not when the data were gathered. The variable 'Scope' tells whether the study explored the library value of an individual library, the value of libraries at the level of a county, a region, a state (in USA), or at the national level. Table 1 gives an impression of the growth of studies during the last decade. In 2006, the number of studies reaches a top score, with as much as 12 studies published that year. The figure from 2008 is of course too low for the year as a whole, since the data gathering stopped in April.

Table 1 displays the variation on the variable 'scope', which has a more even distribution. Valuation of individual libraries are studied in 15 reports, while studies at a national level are explored in seven studies, at the county level in six studies, at the state level in four and at the regional level only in one.

With regard to the countries where the studies are conducted, United States is clearly the dominating nation with as many as 28 out of the total of 34. None of the other countries has more than one or two studies. This is in contrast to the findings of the Swedish international review (Wagman, 2007) of all sorts of library valuation studies, not only those reporting ROI ratio.

Table 2: Crosstabulation of library type and country of the library valuation studies.

		Library Type				
		Public	Academic	Special	National	Total
USA	Count	25	2	1	0	28
	%	89.3%	100.0%	50.0%	.0%	82.4%
UK	Count	1	0	0	1	2
	%	3.6%	.0%	.0%	50.0%	5.9%
Australia	Count	1	0	0	0	1
	% e	3.6%	.0%	.0%	.0%	2.9%
NewZealand	Count	0	0	0	1	1
	%	.0%	.0%	.0%	50.0%	2.9%
SouthCorea	Count	0	0	1	0	1
	%	.0%	.0%	50.0%	.0%	2.9%
Norway	Count	1	0	0	0	1
	%	3.6%	.0%	.0%	.0%	2.9%
Total	Count	28	2	2	2	34
	%	100.0%	100.0%	100.0%	100.0%	100.0%

In Table 2, the dominance of the United States is shown by crosstabulating the variables ‘Country’ and ‘Library type’. Of all the ROI library valuation studies regardless of library type, 82.4 percent is conducted in USA. Of all studies valuing public libraries, 89.3 percent is conducted in the United States. The only exception is the library type National Libraries, where none are done in the USA.

The most striking trait shown in Table 2 is the skewness or asymmetry in the frequency distribution of the dataset with regard to country as well as to library type. Public libraries are the dominating library type, counting 27 studies. The remaining nine studies are distributed with two studies only exploring the value of academic, special and national libraries, respectively. The skewness in the dataset makes several statistical analyses difficult, among them multivariate regression which could give a better description of the patterns in the library valuation studies.

At this stage of the development of the ROI library valuation studies, a complete list of all the studies can help to give an overall picture of this part of the library valuation field. Table 3 displays all the 34 studies. The variable 'Method' is given three values: 1 depicts a combination of cost/benefit analysis and contingent valuation; 2 depicts a combination of cost/benefit analysis and measurement of secondary economic impact; and 3 is methods other than these. However, this variable is not unambiguous but registered after best judgment. Most of the studies use more than one method. In some of the studies, several methods are applied to measure the same good (here: the library) and function as a calibrating factor thus heightening the reliability of the result of the measurement. In these studies, the final amount or result may be determined as the average of the results from the different methods. In other studies, different methods are used to measure different aspects of the good library, such as *direct value* and *secondary economic benefits*. Here, the value amounts found by the different methods are summed up to determine the total value. To further complicate, a few studies do both.

Table 3: Library valuation studies reporting a ROI ratio described by year, library type, scope, country, method, benefit types, and return on investment (ROI).

Study	Year	Library type	Scope	Country	Method	Benefit types	ROI
1. Illinois, see Luther	2008	Academic	Ind.library	USA	3	Direct	4.38
2. Indiana	2007	Public	State	USA	2	Direct	2.38
3. South Korea, see Chung	2007	Special	Ind.library	South Korea	1	Direct and indirect	1.97
4. Vermont, see Kotch	2007	Public	State	USA	2	Direct and indirect	5.05
5. Ohio, see Value for Money	2006	Public	Regional	USA	2	Direct	3.81
6. Pennsylvania, see Griffiths, King&Aerni	2006	Public	State	USA	1	Direct and indirect	5.50
7. Denver, see Colorado State Library a	2006	Public	Ind.library	USA	1	Direct and indirect	4.96
8. Douglas, see Colorado State Library b	2006	Public	County	USA	1	Direct and indirect	5.02
9. Eagle Valley, see Colorado State Libr. c	2006	Public	Ind.library	USA	1	Direct and indirect	4.28
10. Fort Morgan, see Colorado State Libr. d	2006	Public	Ind.library	USA	1	Direct and indirect	8.80
11. Mesa, see Colorado State Library e	2006	Public	County	USA	1	Direct and indirect	4.57
12. Montrose, see Colorado State Libr. F	2006	Public	Ind.library	USA	1	Direct and indirect	5.33
13. Rangeview, see Colorado State Libr. g	2006	Public	Ind.library	USA	1	Direct and indirect	4.81
14. Carnegie library of Pittsburgh	2006	Public	Ind.library	USA	2	Direct and indirect	5.87 ^a
15. Middle Country, see Kamer 2006a	2006	Public	Ind.library	USA	2	Direct	4.59
16. Northport, see Kamer 2006b	2006	Public	Ind.library	USA	2	Direct	3.30
17. Suffolk County, see Kamer 2005a	2005	Public	County	USA	2	Direct	3.93

<i>Continues on the next page</i>							
Study	Year	Library type	Scope	Country	Method	Benefit types	ROI
18. Port Jefferson, see Kamer 2005b	2005	Public	Ind.library	USA	2	Direct	4.14
19. Norway, see Aabø	2005	Public	National	Norway	1	Direct and indirect	4.00
20. South Carolina, see Barron et al.	2005	Public	State	USA	2	Direct and indirect	4.48
21. Florida, see Griffiths et al. 2004	2004	Public	State	USA	1	Direct and indirect	6.54
22. British Library, see Pung et al. 2004	2004	National	National	UK	1	Direct and indirect	4.40
23. Miami-Dade	2004	Public	County	USA	2	Direct	3.85 ^a
24. Illinois etc., see Holt et al. 2003	2003	Public		USA	1	Direct	1.34 ^a
25. National Library of New Zealand	2002	National	National	New Zealand	1	Direct and indirect	3.50 ^b
26. US Special library, see Bromley	2002	Special	Ind.library	USA	1	Direct	1.26
27. St. Louis, see Holt et al. 2001	2001	Public	Ind.library	USA	1	Direct and indirect	3.75 ^a
28. Baltimore, see Holt et al. 2001	2001	Public	County	USA	1	Direct and indirect	4.50 ^a
29. Birmingham, see Holt et al. 2001	2001	Public	Ind.library	USA	1	Direct and indirect	2.00 ^a
30. King County, see Holt et al. 2001	2001	Public	County	USA	1	Direct and indirect	7.5
31. Phoenix, see Holt et al. 2001	2001	Public	Ind.library	USA	1	Direct and indirect	10.00 ^a
32. UK, see Morris et al.	2001	Public	National	UK	3	Direct	1.13
33. Virginia, see Harless and Allen	1999	Academic	Ind.library	USA	1	Direct and indirect	3.5
34. Australia, see Haratsis	1995	Public	National	Australia	1	Direct and indirect	2.00

^a These studies have reported more than one ROI ratio. The average amount is included in the table.

^b This study valued the National bibliographic database and the National union catalogue only.

Table 3 displays the studies in chronological order. An explanation for the high number of 12 studies published in 2006 is found. In Colorado, the Library Research Service at the Colorado State Library conducted individual return on investment studies of eight libraries in the year of 2006. The return on investment for every \$1.00 invested varied from \$4.28 to \$8.80 between seven of the libraries. The Colorado library study number eight, Cortez public library, got a ROI of \$31.07, which is omitted from the subsample of my study, since it is considered an outlier.

In Table 4, ROI statistics is shown. The minimum reported valuation amount is 1.13 and the maximum is 10. The mean and median of ROI is 4.31 and 4.33, respectively. The standard deviation is 1.95. These figures must, however, be viewed with caution due to the relatively small number of studies and the lack of consistency in methodology and applications.

Table 4: Mean, median, standard deviation, minimum and maximum of return on investment (ROI) in 34 library valuation studies

Number of studies	34
Missing	0
Mean	4.31
Median	4.33
Std. Deviation	1.95
Minimum	1.13
Maximum	10.00

Concluding remarks

This paper has started a mapping of library valuation studies that have reported a ROI ratio. The analyses of the dataset show that for this the subgroup of the field of library valuation research, the critical mass of studies has not yet been reached. The number of study entities is still relatively small, making the asymmetry in the frequency distribution of central variables describing the studies, e.g., library types and countries of origin, a problem for statistical analysis. For public libraries, the number of studies is relatively high, but for academic, special, and national libraries a substantial increase in studies seems necessary to reach a new stage in the development of this research field.

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