

GAO

Report to the Assistant Librarian for
Processing Services, Library of
Congress

August 1989

LIBRARY OF
CONGRESS

Costs and Savings of
Converting to On-line
Cataloging



**Program Evaluation and
Methodology Division**

B-235898

August 14, 1989

Ms. Henriette Avram
Assistant Librarian for
Processing Services
Library of Congress

Dear Ms. Avram:

We have received the revised final version of your report on the use of computer workstations in the cataloging area. As required by House Report 100-621, we have been consulted by staff of the Library of Congress concerning the proper methodology for analyzing staff reductions, productivity increases, and other savings resulting from adding workstations for cataloging work. We have met with members of the Library of Congress Processing Services Department and have reviewed relevant documents, including past studies prepared by the Library of Congress and earlier versions of your current report.

As we indicated in our letter of January 25, 1989, it is too early to form any definitive conclusions about the effects of workstations called for under the current appropriation, because these facilities have not yet been installed. Information about their effects can be estimated from studying the results of installing workstations in the past, but such estimates would only be preliminary approximations, due to measurement and research design limitations.

We did not conduct a full-scale evaluation or audit of the work of the Library that we discuss in this report. We did not examine the data on which the Library's estimates were computed, nor did we assess the validity or reliability of those data. Our work was restricted to an examination of the methods used by Library staff to analyze data on past performance. In some instances, we have reported on how different procedures could have resulted in somewhat different estimates of costs or savings. However, we did not perform our own calculations.

With these limitations in mind, we offer the following comments on the report you have submitted for our review. (We have divided our discussion into sections dealing with costs, savings, and miscellaneous items.)

Costs

In general, the discussion in the Library's report of the methodology for estimating the costs of installing workstations is reasonable. In using an

estimate of staff costs based on the maintenance of a constant level of output, the Library has selected that method which involves the higher overall labor costs (compared to the alternative of equating output with that of the sections that are not on-line). The use of this method tends to reduce the estimate of net savings substantially, resulting in a conservative estimate of the effect of workstations.

However, we have some questions concerning certain aspects of the methodology that the Library employs for making the cost estimates. The first question concerns the position that the space costs for workstations cannot be estimated. (See appendix C, page 5, and appendix D, page 6, of your report.) Given that the report shows \$657,085 in savings from space reductions in the searching phase, it seems logical that it would also contain calculations of the additional space needed for the on-line cataloging phase, using the same \$55 per square foot figure. We believe that the Library needs to address this additional-space issue in future annual reports, as required by House Report 100-621.

Second, the report does not describe the methods used to derive the estimates of additional staff costs for the subject catalog, shelf listing, and Dewey sections. The productivity analyses that underlie the "descriptive/shared staff" cost estimates are not presented for the other three sections in the report, so it is difficult to evaluate the reasonableness of the methodology used to generate these estimates. (These additional staff costs appear to be small items, however.)

Finally, we found no entries for the costs of supplies, utilities, or insurance for the workstations (unless these are included under "maintenance"). In view of the fact that the report claims savings for this item, we suggest that any additional costs should also be taken into account.

Savings

The method for estimating savings is generally reasonable, but there is some need for improvement in future reports. For example, we believe that improvements could be made in the analysis of productivity savings for the searching phase. Use of 1984 as the baseline year is a reasonable position, but it does not provide a precise measure of how the Processing Services Department would have performed in the absence of workstations. Conversely, the 1981-1983 figures, which reflect changes in the cataloging rules and the productivity changes attendant upon the first year of full on-line searching, are abnormally low, and thus the use of these as base-year figures could have artificially inflated the productivity gains claimed by 1986.

However, 1986 was the high point in productivity over the period covered, so the estimates of improved productivity during the 1984-1986 period may overstate the effect of workstations. Although it is not clear why, productivity did drop somewhat between 1986 and 1988. And, the effect of that drop was such that the productivity savings estimate arrived at by comparing 1988 with 1984 is somewhat less than the savings estimate produced by comparing 1986 with 1984. Given the situation as it is described here, perhaps the best approach would have been to compare the average productivity for the 1986-1988 period with the 1984 baseline figure. In addition, the Library should look into the reasons for the productivity decline after 1987.

Furthermore, in computing the savings resulting from reduced need for filing staff, the report claims an amount equal to only 40 percent of the total cost of those positions on the ground that this represents the time actually spent on maintaining the catalog. This discounting is commendable in that it prevents the overstating of savings from workstations, but the report does not show how the 40 percent figure used as the basis for the discount was arrived at. As a result, we cannot judge whether this percentage is the correct discounting factor. In future reports, we believe the Library needs to document the basis for such estimates.

Moreover, the comparison of the savings for 1979 with those for 1988 is valid only if the workload was the same for those 2 years. If the workload was higher in 1988 than in 1979, then the savings would have been greater (and, conversely, if the workload was lower, the savings would have been less). If possible, then, the Library should compute figures that reflect actual workload, or at least note that actual savings would depend on the volume of work.

Finally, the entries under phase II of the automation program for contracts, machine-readable cataloging (editorial division), and supplies are not well documented. It would be appropriate to include the same kind of information here (number of positions at each grade level and labor costs associated with those positions) as the report does in appendix B, which deals with savings in phase I. While this may be essentially a matter of documenting the calculations behind your savings estimates, it is important because the present report provides no basis for evaluating these numbers.

Miscellaneous

On page one of appendix C, the report states that "statistical measures may not, despite our best efforts, be consistent from place to place or

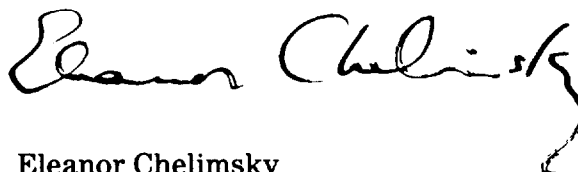
even from time to time within the same place." However, the report does not indicate (if only by way of examples) why this noncomparability exists, nor does it indicate what steps the Library will take either to ensure greater comparability or to develop statistical procedures that take these inconsistencies into account. We will continue to consult with the Library on the development of methods of avoiding some of these problems in future reports. (The same point applies to appendix D.)

Appendixes C and D of the report contain a number of (nonquantified) benefits of using workstations, including improved staff morale, timeliness of information provided, "probable" reduction in duplicative efforts, and faster error correction. Does the Library have data (opinion surveys, for example) to support these assertions? If not, even though these items do not affect the financial analyses, we believe the Library needs either to document the benefits or to make clear that they are based on professional judgment only.

Future Work

We will continue to provide support for your work as you install new workstations and evaluate their effect on staff reductions, productivity increases, and other savings. As we indicated in our earlier letter, precise estimates may be hard to arrive at because of the variety of other experiments the Library of Congress is conducting that will also affect cataloging procedures, and because only a part of the \$1.2 million workstation appropriation will be spent on the cataloging area (so that any changes may be relatively small and consequently hard to detect). Nevertheless, we will seek to help the Library of Congress provide the best possible answers to the questions raised in House Report 100-621. If you have questions about this report, please feel free to contact Patrick Grasso (202-275-1907) or Terry Hanford (202-275-3579) of my staff.

Sincerely yours,



Eleanor Chelimsky
Assistant Comptroller General

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