



Time-Driven Activity-Based Costing for Inter-Library Services: A Case Study in a University

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Although the true costs of inter-library loans (ILL) are unknown, universities increasingly rely on them to provide better library services at lower costs. Through a case study, we show how to perform a time-driven activity-based costing analysis of ILL and provide evidence of the benefits of such an analysis.

INTRODUCTION

Ever diminishing university funding by the government¹⁻⁴ urges university library management to provide better library services at a continuously lower cost.² To cope with these cost pressures, library management needs to improve its understanding of the relevant cost drivers.

To date, most studies on university library costs have relied on traditional activity-based costing (ABC) systems.^{2,3,5} Although these studies found ABC both providing library management with a more detailed cost analysis of activities and services, and assisting management in understanding what actually causes certain costs,^{2,3} ABC also appeared to cause two significant problems. First, setting up an ABC system can be very costly, especially if the current accounting system does not support the collection of ABC information. Second, the system needs to be regularly updated, which further increases its cost.³ These limitations motivated Kaplan and Anderson⁶ to develop time-driven activity-based costing (TDABC), a revised version of ABC, solving these problems, without losing the benefits. The most important characteristic of this technique is its simplicity, as only two kinds of parameters need to be estimated: the number of time units (e.g. minutes) consumed by the activities related to the cost objects and the cost per time unit. Hence, TDABC systems cannot only be implemented quicker (and thus cheaper), but also updated easier, than traditional ABC systems.⁶

Since services constitute the ideal setting to implement a TDABC system in order to improve the service's cost management, we performed a case study at the Arenberg library of the Catholic University of Leuven (KULeuven). Although we argue that TDABC could improve the cost management of all library services, as identified by Ellis-Newman and Robinson,² Ellis-Newman,³ and Goddard and Ooi,⁵ we only concentrated on the inter-library loan (ILL) service, for several reasons. First, ILL is directly linked to the increasing cost pressures on university libraries. Indeed, Nitecki and Renfro⁷ confirm that library management relies more and more on ILL, in order to provide good library services in times of decreasing library buying power. When books or journals are not available in the library of choice, readers can request them from other libraries via the two-directional ILL system. Second, an accurate cost calculation is important for ILL services. On the one hand, the processing costs for an inter-library loan are higher than for an internal loan, because inter-library loans require higher-level staff and are

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more time consuming to process.^{3,8} On the other hand, also the costs of different ILL requests vary significantly, with a huge difference between straightforward requests and the most difficult ones. Hence, allocating the same amount of costs to these different types of requests would be inaccurate.³ Third, contrary to overall library costs, specific ILL costs have been extensively studied in the past, frequently as one of the four general agreed ILL evaluation criteria: fill rate, turnaround time, user satisfaction and cost.⁹ In the following paragraphs, we summarize the findings of some relevant studies. For a more extensive overview of ILL cost studies, we refer to Stein.⁹

In 1992 the Association of Research Libraries (ARL), conducted the first major ILL cost study in North America and found that research libraries spent on average *\$18.62 to borrow (ranging from \$9.84 to \$30.27) and \$10.93 (ranging from \$6.92 to \$17.49) to lend via ILL.¹⁰ The follow-up study¹¹ by ARL expanded the research to all four ILL performance measures and increased the library sample from seventy-six to ninety-seven research libraries. ILL costs appeared to have declined slightly to \$18.35 for borrowing and \$9.48 for lending. Additionally, twenty-two college libraries were questioned, that showed significantly lower ILL borrowing costs of \$12.08 and lending costs of \$7.25.¹¹ The ARL methodology was subsequently adapted for use in Australia and the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden). In Australia, the average borrowing unit cost was AU\$32.09,¹² while research in the Nordic revealed an average borrowing unit cost of €12.56 and average lending cost of €7.24.¹³

The second ARL performance measurement study^{14,15} of seventy-two North American research, college, and governmental libraries also measured patron-initiated (or unmediated) ILL criteria and found lower unit costs than for mediated ILL services. Borrowing unit costs for user-initiated ILL ranged from \$2.39 to \$14.7, compared to \$17.50 for mediated ILL. Similar results were found for lending, with a lending unit cost for user-initiated ILL ranging from \$3.27 to \$12.06 and \$9.27 for mediated ILL.^{14,15} Yet, the most famous consortium regarding patron-initiated ILL is undoubtedly OhioLINK, a consortium of Ohio-based college and university libraries, which created an alternative for traditional ILL. By utilizing user-initiated requests, a single automated system for fifty-two library collections, a commercial delivery service, and a staffing context that requires little more than low-cost student labor, OhioLINK has achieved average ILL unit costs of not more than one dollar. Therefore, OhioLINK members made ILL affordable on a mass volume basis and do not even call it ILL any longer, but simple circulation.^{16,17}

A similar patron-initiated borrowing service project was implemented by seven private East Coast institutions and called "Borrow Direct". Compared to traditional ILL costs, Borrow Direct achieves significantly lower per-transaction costs, namely \$5.33 for borrowing and \$6.48 for lending.⁷ Nevertheless, these interlending costs remain higher than OhioLINK costs, primarily because Borrow Direct members do not share a common automated system and must operate across state lines.¹⁷ The same cost comparison can be made for the Jefferson County Public Library (JCPL), member of the Prospector INN-Reach consortium in Colorado, although the ILL per-transaction costs of Prospector appeared much closer to the OhioLINK costs: \$1.17 for lending and \$1.56 for borrowing.¹⁸ Another very recent ILL cost investigation was conducted at the US National Institute of Standards and

Technology (NIST) Library and revealed a significant increase in the total average cost per request, from \$29.91 in 2003 to \$41.20 in 2004.¹⁹

We would like to contribute to this ILL cost study literature by providing a whole new approach, based on time-driven activity-based costing (TDABC), for calculating ILL costs. Contrary to traditional ILL cost studies such as the ARL studies, TDABC does not follow Lor's²⁰ "macro-approach" of dividing yearly aggregated costs by total number of requests filled, but the "micro approach", involving cost data collection and calculation for the various steps in ILL processing. This way, the TDABC approach results in disaggregated costs for all ILL service activities, instead of aggregated dollar figures like \$x for borrowing and \$x for lending. As the KULeuven library manager confirmed that "ILL is extremely time consuming, difficult to define in terms of subactivities, significantly different across the requests and costly", the in-depth TDABC analysis really answers a practitioner's request in order to reveal the true cost of ILL and clearly show what activities cause the costs.

The remainder of this paper is organized as follows. First, we present the inter-library TDABC case. Second, we discuss the management implications resulting from our analysis. Third, we end the paper with a brief conclusion.

TIME-DRIVEN ACTIVITY-BASED COSTING FOR INTER-LIBRARY LOANS

In this part of the paper, we thoroughly explain the inter-library TDABC analysis. To that end, we first briefly describe ILL at the KULeuven Arenberg library. Then, we present a thorough activity analysis and derive time equations for each request activity. Third, we provide an overview of all related ILL costs and identify the different costs per minute. Based on these time equations and costs per minute, we finally calculate the cost of different outgoing and incoming requests.

The activity data for this study were gathered through direct observation and multiple interviews with both the library manager and the ILL responsible (cf. Goddard and Ooi⁵). Cost data were obtained from the library accountant and other information was found by means of archival research, which included inter alia the annual report. All observations were made during 2006 and all financial data (like wages and overhead costs) are from 2005.

Inter-Library Loans (ILL) at the KULeuven Arenberg Library

The KULeuven Arenberg library's mission is "to develop a well-balanced collection for education and research, with extended opening hours for students, an electronic library that can be consulted at individual workplaces and the facilities for guided self-education" (Annual Report, 2005). The recent trends to automate standard processes, like lending and receiving books, and to digitalize the library are aimed at attaining this goal at the lowest possible cost. Furthermore, the library is a member of the LIBIS-network, which manages the library systems of the entire KULeuven and LIBIS-Net. LIBIS-Net's mission is to support participating libraries in their library management and the services they provide, such as ILL. Like any other ILL system, LIBIS-Net. supports on the one hand that the KULeuven library borrows books and requests journal articles that are not present in its collection, the so-called outgoing requests, and on the other hand that the library lends items to other libraries, the so-called incoming requests.

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