

Using Time-Driven Activity-Based Costing in Assessing Acquisition process: A case Study in Estonian University Libraries

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Introduction

Libraries today are included in the general demand for cost transparency and effective cost management. In the current socio-economic situation, it is challenging to cope with the same or reduced resources in managing the same processes and activities, so that the quality of the result would not be affected. The need of library managers to justify their costs to their parent organizations has become particularly important, perhaps even more important than ever in the history. With the data they have traditionally collected, libraries can assess details about the costs of collection building; what they need now are reliable data about the costs of their services and products. However, libraries lack a specific overview of the activities between which their costs are divided. Cost accounting is the simple process of breaking down resources to the activity being carried on and then collating the monetary cost to show the cost of the activity. The time-driven activity-based costing TDABC helps to get a better picture of the acquisition related activities that libraries are actually engaged in and their costs.

Stouthuysen *et al* state that „Though digital libraries began more and more to be developed, the print format books – both scientific books and textbooks - are still very important for university libraries and continue to pour into acquisition activities. Not only the levels of responsibility and time spent on activities related to digital resources but also to nondigital resources have increased compared to 5 years ago. One reason for this is that print and digital formats each have exclusive values, and until those values can be replicated in other media, both formats must be collected, maintained, and supported by libraries. Print formats have independent value and contain centuries of information not yet available in digital formats” (Stouthuysen *et al* 2010, p. 84).

The purpose of the present paper is to analyse the cost of activities related to acquisition process in Estonian university libraries based on the example of the time-driven activity-based costing (TDABC) method. More specifically, the study concerned both the acquisition process of foreign as well as domestic documents in physical carriers – books, audiovisual documents and printed music documents. Only documents acquired as purchases were added.

While analysing the results, it appeared that the difference in time consumed for purchasing a document can be remarkable and it concerns, first and foremost, acquiring foreign documents.

Research methodology and data collection

Time-driven activity-based costing (TDABC) method was designed in the USA in the beginning of 2000s by Robert Kaplan and Steve Anderson. The TDABC model can be estimated and installed quickly as only two parameters are required: 1) the number of time units (e.g., minutes) consumed by the activities related to the cost objects (the activities the organization performs for products, services, and customers), and 2) the cost per time unit. In other words, it is necessary to determine the capacity cost rate and the use of capacity of the implemented activities carried out by each subunit. Both parameters are easily identifiable. Practical capacity is often estimated as a percentage, for instance, 80% or 85% of theoretical capacity. That is, if an employee can normally work 40 hours per week, practical capacity could be assumed to be 32 hours per week. This estimate allows for 20% of personnel time for breaks, arrival and departure, and communication and reading unrelated to actual work performance. It is also very important to stress, though, that the question is not about the percentage of time an employee spends doing an activity, but how long it takes to complete one unit of that activity (the time required to process one order: for example, how much time it takes to deal with one interlibrary loan request – order reception, request handling, and transmission of orders). Knowing the real (practical) capacity of the resources used and the time spent on activities, it is possible to determine the cost of each activity by multiplying the time spent on activities by the practical capacity of the resources (Kaplan & Anderson, 2007; Pernot *et al*, 2007).

The study was conducted in a Tallinn University of Technology Library (TUT Library) and in the Estonian Academy of Music and Theatre Library (EAMT Library). Both selected libraries are university libraries governed by public law. These libraries were chosen because they are funded on a similar basis, they perform the same functions and

their main aim is to support high quality education and to increase the state's potential for ongoing scientific discovery and development.

In accordance with the analysis of the previously conducted research, the study was divided into the following stages: identification of key activities, identification of all resources, involved in the process, identification of the capacity cost rate and determination of time spent on activities.

In the first phase, all the staff members involved in this work process, as well as their general duties and those specifically related to acquisitions were mapped. On the basis of the descriptions of the staff and interviews conducted with them, and the analysis of the documents, all the activities that have to be done with a book during the ordering and receiving process were determined and recorded. As a result of this stage, filled questionnaires of participant observation was prepared. In the filled questionnaires, prepared on the basis of job descriptions and interviews with employees, the staff members were asked to undertake self-observation, that is, to record the time spent on a specific activity in the observation report. The questionnaire also enabled to add notes. Stopwatch was recommended to measure the time as exactly as possible.

The next step was the study of library statistics for identification of the resources. The statistical reports of activities of 2013 were used to determine the numerical data on the staff, expenditure, working days and working minutes in month derived from days, size of the collection, and additions.

As the result, the capacity cost rate in EAMT Library and in TUT Library was calculated.

Finally, the cost of every activity and the cost of the whole work process in total were calculated. The time spent on the activity was multiplied by the capacity cost rate to reach the cost of the activity.

Results

While ascertaining the key activities of acquisition process, it appeared that the activities differ both between the libraries as well as the documents concerned. A relatively time-consuming activities in both libraries are receiving the order, transferring the order to the supplier, registering the reception of the document.

On the average, purchasing of documents published abroad is approximately 91 percent more time-consuming and therefore more expensive than purchasing domestic documents at TUT Library. The large difference in time consumption is conditioned by the fact that the TUT Library makes its decision on purchasing domestic documents on the basis of the weekly exhibition of legal deposit copies. Although employees from the Information Services Department, and from the Library Services Department make their recommendations, the acquisition librarians have the final say, what to acquire. The acquisition process of documents in foreign languages for TUT Library completely differs. Because the process is divided between the two departments, it is too complicated and time consuming. Solution would be that the orders from academic staff and students come directly or via „Send a suggestion“ or via „Ordering new books“ forms to the acquisitions librarian. Resulting from the large difference in time consumption, the difference in the financial cost also turns out to be big – when the average cost of cataloguing a document in the foreign language is €9.12, then the average cost of cataloguing a domestic document is only €0.8.

There occurs no such amount of difference in time consumption and costs while speaking of the EAMT Library. The acquiring of documents in foreign languages takes only approximately 33 percent more time and money than the acquiring of domestic documents here. The average cost of acquiring a document in the foreign language is €2,14 and the average cost of acquiring a domestic document is €1,45.

The purchasing of foreign documents in TUT Library takes approximately 78 percent more time and money than in EAMT Library. However, in the case of the purchasing of domestic documents the situation is reversed – in EAMT Library it takes approximately 40 per cent more time and money than in TUT Library.

Conclusions

Because the words “efficiency” and “productivity” are not culturally accepted in the context of library, TDABC is an appropriate method for the evaluation of the library work:

- in the case of the TDABC, the question is not about the percentage of time an employee spends doing an activity, but how long it takes to complete one unit of that activity;
- the TDABC model can be tested and implemented by departmental managers for each separate library department or for each work process;
- the TDABC already considers many aspects that affect employees' efficiency and performance, e.g., rest periods, personal time for breaks, arrival and departure, and communication and reading unrelated to actual work performance.

The TDABC is well suited for a library setting, involving many activities with complex time drivers. The TDABC seems to be one of the best tools for understanding cost behavior and for refining a cost system for university libraries. This is also a great method for mapping the organizations' activities and processes. Although the

documenting the activity flows and data collection to gather the time duration can be time-consuming for researcher, and uncomfortable for the staff of being observed, it enables to seek out how it would be possible to shorten the time consumed for certain activities and, by this, turn it more cost-effective without damaging the work quality. While integrating the TDABC method with the analysis of library performance indicators, the more valuable data is possible to produce for managerial decisions.

Library personnel willingly participated in the time measurements. Identifying the staff members involved in the acquisition process and seeking out the activities they were engaged in was swift and the course of the study understandable to all its participants.

Finally, it should be emphasized that no method of measurement can not give all answers and the final truth. There are intangible factors in the library work that no cost accounting system can ever reach. Although through the decades there have been several endeavours place the library work under factory-wise standardized product so, that library staff can be worth their salaries, it has not been fully successful. In and of itself no cost system can cut costs. All it can do is to show the administrator where costs may, and should, be cut. However effective a tool cost accounting may be, it is only a tool. And no tool does work unless it is used, and every tool does its best work in the hands of a skilled employee.

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Keywords: Cost accounting; Time-driven activity-based costing; Case studies; University libraries, Estonia

Curriculum Vitae

Kate-Riin Kont graduated from the Department of Librarianship and Information Science, Tallinn University in 1995; she earned an MA from the same department in 2004. Since 2009, she has been involved in doctoral studies at Tallinn University. Since 2008 she works as Head of the Acquisition Department of the Tallinn University of Technology Library. She is the member of the Estonian ELNET Consortium Working Group on Licensing of E-Resources and of the Terminology Working Group of the Estonian Librarians' Association. Since 2014 she leads the Collections Working Group of the Estonian Librarians' Association.