LIBRARY LEADERSHIP & MANAGEMENT

Organizing a Successful Workload Analysis Project

Kevin Yanowski and Catherine Sassen

Abstract

A workload analysis can provide valuable information for administrators if it is carefully organized to engage participants and encourage honest feedback. This article describes how a department head organized and implemented a successful workload analysis in the cataloging department of a large university library. This project enabled a new department head to better understand the workload of each employee and to ensure that assignments were equitably distributed. Employees were extensively involved in planning the project, conducting the pilot study, and documenting their workloads. The results of the project were used to rebalance assignments in the department and determine cross-training needs.

Introduction

Technical services librarians conduct work analysis studies to collect the evidence they need to make informed decisions about staffing and operations. These studies often are prompted by the need to use resources efficiently and effectively in support of the library's mission (Shelton and Carrico 2019). Staffing changes, management changes, reorganizations, and many other factors can contribute to the need for a workload analysis.

A workload analysis project consists of the following steps. First, the team defines the goals for the project, chooses a project manager, selects the instruments used to collect data, determines the level of detail to collect, and decides on the length of time for the project. Finally, after the data are collected and initially analyzed, the results are communicated to stakeholders. The results include all the findings as well as follow-up plans.

This case study concerns a workload analysis project conducted in the Cataloging and Metadata Services Department of the University of North Texas Libraries. The focus of this article is on the organization of the project, specifically the goals, planning, methods, and data analysis.

Literature Review

This literature review explores key aspects of work analysis studies in library technical services. It identifies the primary reasons for conducting work analysis studies and describes the methods used in these studies. To keep the scope of the review manageable, it is limited to publications issued after 2000.

Reasons for Work Analysis Studies

Staffing changes have triggered work analysis studies in a variety of library technical services settings. Smith College Libraries initiated a work analysis study after experiencing a staff cut of more than 10 percent (Loring 2007). A staffing shortage combined with increased funding for monographic acquisitions led to a workflow analysis study at Kansas State University Libraries (Youngman 2006). Employee turnover, resulting in the introduction of new management, spurred workflow analysis studies in the libraries of North Carolina State University and East Carolina University (Blake and Stalberg 2009; Dragon and Barricella 2006).

A manager may conduct a work analysis study when planning a reorganization or a renovation to glean valuable information about workflows and staffing needs. Librarians at the University of Northern Colorado and McMaster University studied workflows when initiating reorganization projects (Leffler and Newberg 2010; Martin 2004). A work analysis study was conducted as part of the library renovation planning process at Southern Illinois University Carbondale's Morris Library (Canepi 2007).

Changes in a department's responsibilities may prompt a work analysis project. Old Dominion University's librarians analyzed workflows when adjusting to receiving fewer print resources and more electronic resources (Graves and Arthur 2006). The University of Oklahoma Libraries launched a workflow analysis project when digital library metadata creation responsibilities were added to the work of the Cataloging Department (Valentino 2010).

A work analysis study may be needed when planning the implementation of a system to manage library resources. Librarians initiated a workflow analysis project at the University of California, Irvine when they were planning the transition to a new integrated library system (Pascual and Wallbank 2021). The migration to a new library services platform motivated a workflow analysis project at the University at Albany – SUNY (Waterhouse 2021). The Technical Services Department of the University of Michigan Library conducted a workflow analysis study when preparing to implement an electronic resources management system (Campbell et al. 2015). Anderson (2014) provides guidance in using the results of a workflow analysis study to select an electronic resource management system.

Work analysis studies can be used to address productivity issues. Librarians at Illinois State University conducted a time-to-shelf benchmarking study for newly acquired books and identified measures to reduce turnaround time (Gibson 2015). The Ohio State University Library undertook a workflow study in response to complaints about the time taken to access unprocessed items in the Cataloging Department (McGurr 2008). Cataloging workflows at the University of Michigan Library were analyzed to improve efficiencies (Billings et al. 2017). Electronic resource workflows in the libraries of Duke University and Baruch College, CUNY were studied to identify and resolve problem areas (Dowdy and Raeford 2014; Hamlett 2016). An organization may conduct work analysis studies on a regular basis to support effective decision making. This approach has been used by the Acquisitions & Discovery Department at North Carolina State University Library to collect evidence needed for agile management (Collins and Wilson 2018).

Methods Used in Work Analysis Studies

Two methods used to conduct work analysis studies are process analysis and numeric analysis (Mayo et al. 2002). Process analysis involves examining workflows and determining if the steps should be revised to improve the process. Numeric analysis involves analyzing the time spent on work and the outputs produced.

Process Analysis

Process analysis studies are carried out with a variety of approaches, including workflow mapping, task inventorying, interviewing, and shadowing. Many process analysis studies documented in the library literature include more than one approach.

A workflow map is a graphical representation of a series of steps in a workflow. Workflow mapping was used by librarians at Southern Illinois University to analyze technical services processes and address efficiencies and effectiveness (Canepi 2007). At Kansas State University, industrial engineering graduate students created a workflow map of the monograph selection, ordering, and payment process in response to an increased workload (Youngman 2006). Acquisitions and Discovery Department employees at North Carolina State University Libraries initiated recurring reviews of department workflows to improve core processes, including ordering and invoicing (Collins and Wilson 2018). Also at North Carolina State University Libraries, Metadata and Cataloging Department employees used workflow mapping and workflow analysis to study the serials and electronic resources workflow (Blake and Stalberg 2009).

A swim lane diagram is a process map that identifies the individuals responsible for tasks in a workflow. Librarians created swim lane diagrams to analyze technical services workflows at

the University of Michigan and the University at Albany – SUNY (Billings et al. 2017; Waterhouse 2021).

A staff responsibility matrix is another type of visualization created to identify individuals accountable for completing tasks in a workflow. Librarians at the University of Michigan and Duke University created staff responsibility matrices when conducting electronic resource workflow analysis studies (Campbell et al. 2015; Dowdy and Raeford 2014).

A task inventory is another tool to use in a workflow analysis project. E-Resources and Metadata team members at the University of Guelph Library inventoried their tasks and projects as part of their workflow analysis project. They used this information to develop priorities and revise tracking and assignment procedures (Brisbin et al. 2020).

Interviews and surveys of participants may be used when creating or revising workflow maps. A workflow analysis project at the University of Michigan included a staff survey, followed by staff interviews, to create 90 workflow maps (Billings et al. 2017). Technical services librarians at the University of California, Irvine used Focused Rapid Contextual Design to analyze workflows (Pascual and Wallbank 2021). This approach involved interviewing staff and then creating a sequence model of tasks to identify and remedy inefficiencies. Technical services librarians at Southern Illinois University surveyed staff after drafting a workflow to determine if any workflow elements were missing (Canepi 2007).

Shadowing has been used to gather information for a workflow analysis project. Shadowing involves a researcher closely observing the work of an employee. Metadata and Cataloging Department employees at the North Carolina State University Libraries used shadowing in their workflow analysis study to gain a thorough understanding of employees' work (Blake and Stalberg 2009).

Numeric Analysis Studies

Numeric analysis studies involve collecting and analyzing data on how employees spend their time at work and the outputs they produce. Statistics on technical services activities are crucial because they can be used to document the amount of work produced, justify staffing, evaluate personnel, and assess operations (Intner 2005a). Statistics are also important because they can be used to communicate with stakeholders in terms they understand.

Libraries may establish benchmarks to assess their technical services operations. Charbonneau (2005) defined a production benchmark as "an established set of criteria developed to measure and compare quantitative and qualitative output" (41). She reviewed cataloging productivity benchmarks in the library literature and examined their advantages and disadvantages from the perspectives of various stakeholders. She concluded that "additional

research is needed in order to determine whether established production cataloging benchmarks are feasible and meaningful within academic libraries" (Charbonneau 2005, 40). Mugridge and Poehlmann (2015) surveyed libraries on their use of benchmarking in evaluating cataloging operations. The reasons for benchmarking provided most often by respondents were "to streamline or improve processes" and "make better decisions" (Mugridge and Poehlmann 2015, 148).

McCain and Shorten (2002) surveyed Association of Research Libraries academic libraries to identify variables related to the efficiency and effectiveness of cataloging operations. Efficiency was defined as the number of volumes and the number of titles cataloged per full-time employee. Effectiveness was discussed in relation to backlog size, authority control, and holdings maintenance. The authors discussed the difficulty of identifying peer cataloging departments because a complex host of variables can affect productivity factors. They noted that survey results could be used to create cataloging production benchmarks, with the stipulation that benchmarks "should be established by focusing on those libraries that are efficient and effective: those libraries that fully update their catalogs, consistently maintain authority control, and do not have unmanageable backlogs" (McCain and Shorten 2002, 29).

A process analysis study may include a numeric analysis component. Employees reported how they spent their time at work as part of technical services workflow analysis projects at the University of Michigan and at Southern Illinois University Library (Billings et al. 2017; Canepi 2007).

A numeric analysis study may track costs as well as time. Librarians carried out a time and cost study of serials operations at the University of Oregon Libraries' Acquisition and Catalog departments (Slight-Gibney et al. 2004). A series of time and cost studies was conducted at Iowa State University Library to analyze cataloging, monograph acquisitions, and serials acquisitions operations with the goal of improving efficiency and effectiveness (Fowler and Arcand 2003, 2005; Morris et al. 2000). Guidance in calculating technical services costs is provided by Intner (2005b).

Conclusion

Work analysis is a recurring theme in the library literature. Many managers have reported on studies they conducted to gather evidence used to inform decision making. While many of these accounts concern process analysis studies, few recent articles address numeric analysis studies. This case study fills a gap in the literature by documenting all aspects of a recent numeric analysis study conducted in the cataloging department of a large academic library.

Background

The setting for this study is the Cataloging and Metadata Services Department of the University of North Texas Libraries. The University of North Texas, an R1 research institution, is the largest university in the Dallas-Fort Worth area with nearly forty-four thousand students. The University of North Texas Libraries' cataloged holdings include more than seven million print and digital items housed in six facilities. Library cataloging operations are decentralized, with catalogers in the Cataloging and Metadata Services Department, the Media Library, the Music Library, the Special Collections Department, and the Sycamore Library, which houses the government documents collection. At the time of this study, the Cataloging and Metadata Services Department consisted of a department head, three librarians, and three staff members.

Methodology

The Cataloging and Metadata Services Department head initiated the workload analysis project shortly after assuming his administrative role. As a new department head, he wanted to gain a comprehensive understanding of Cataloging and Metadata Services Department employees' responsibilities. He also wanted to ascertain if assignments were manageable and evenly distributed among employees based on their capabilities.

The department head's first step was to gain the support of his supervisor to plan the project. Next, he discussed the project's goals with employees because he knew that transparency was essential for building a climate of mutual trust. The employees would be more likely to participate fully in the project if the department head involved them in the planning process and encouraged their feedback. He explained that the project's outcomes could benefit not only individuals but also the entire department, and everyone understood that the project might result in a redistribution of work. However, if the project revealed that no changes were needed, it still would be considered a success as a learning experience.

The department met several times to consider different methods of tracking work activities. They also discussed the best month to conduct the study. To avoid summer vacations, holidays, busy beginnings of semesters, and the fiscal year end, they chose to run the project in the month of March.

The department conducted an initial pilot study to identify potential issues before starting a full-length study. During the pilot study, the employees were asked to collect data for one week on how they spent their time at work. They were asked to report the data in Word or Excel, using categories that they defined on their own.

After the data collection phase of the pilot study had concluded, the department head reviewed the employees' reports and realized that the categories of activities defined by each participant varied considerably. After further discussion, the department head chose a reasonable level of detail to be used in the categories for the subsequent full-length project. He also selected Excel as the reporting format because of its inherent data analysis features. These steps laid the groundwork for the full-length work analysis project conducted several months later.

In the full-length project, employees were tasked with reporting their time at work every day for one month (24 business days). They reported their time in hours and minutes (in fifteen-minute increments), using an Excel workbook with a separate worksheet for each employee. The workbooks included the categories for activities (as defined in Table 1), namely "regular cataloging," "unusual cataloging," "meetings," "administrative," "email/Teams," "scholarship," "service," and "other." The categories of "scholarship" and "service" were included because University of North Texas librarians are faculty and therefore are required to be active in these areas. Scholarship usually involves making conference presentations and academic publishing. Service typically consists of serving on committees in professional associations, the university, and the library.

Table 1. Categories used in tracking time

Activity	Definition
Regular cataloging	Cataloging of items one title at a time and batch cataloging.
Unusual cataloging	Cataloging-related activities resulting from one-off requests, such as reclassifying an item or enhancing subject headings in a bibliographic record.
Meetings	In-person, virtual, and hybrid meetings.
Administrative	Administrative and managerial tasks, such as entering and approving time on a timecard, filling out the statistics tracking spreadsheets, or working on employee evaluations.
Email/Teams	Email correspondence and Microsoft Teams posts.
Scholarship	Required for librarian faculty, optional for staff; usually involves making conference presentations and academic publishing.
Service	Required for librarian faculty, optional for staff; typically consists of serving on committees in professional associations, the university, and the library.
Other	Activities that do not fit in any other area.

Gathering information about how employees spend their time is only one aspect of a workload analysis project. Tracking the amount of work performed by employees is also essential. Cataloging and Metadata Services Department employees have a longstanding practice of reporting their cataloging statistics in shared Excel workbooks. One workbook is used to report statistics on resources cataloged individually. Another workbook is used to report statistics on batch cataloging.

The individually cataloged item workbook (Figure 1) reports statistics on the titles cataloged one at a time. The workbook includes a separate worksheet for each employee and within that worksheet, there is a section for each month, a row for each type of resource cataloged, and various columns for the type of cataloging, such as original cataloging and copy cataloging. The statistics entered in each worksheet are automatically summarized on the totals page.

Figure 1. Individually cataloged item workbook

	[Month]			
	CATALOGING			
RESOURCE CATEGORIES	Regular Copy Cataloging	Original/ Complex Cataloging	Added Copy/ Volume	TOTAL
Books				0
Classed serials				0
Databases				0
Electronic resources - individual				0
McNaughton lease books				0
Motion pictures/videorecordings				0
Other				0
Periodicals				0
UNT theses/dissertations (current)				0
TOTAL	0	0	0	0

The batch cataloging statistics for electronic resources are kept in a separate workbook (Figure 2). The worksheets here have columns for details such as the title of the electronic resource, the subcollection, the number of records in the file, the number of records loaded, the date loaded, and the name of the cataloger who loaded the file.

Figure 2. Batch cataloging statistics

Collection Name	Subcollection	Number of Records	Number of Records Loaded	Date Loaded	Loaded by
Kanopy	10/23/23	825	11	24-Oct-23	Aretha
Books at JSTOR Open Access Collection	October 2023	102	102	31-Oct-23	Cher
Kanopy	11/6/23	829	4	6-Nov-23	Aretha
Oxford Bibliographies	September 2023	14	14	6-Nov-23	Dolly
Synthesis Collections (Springer)	2023	475	475	6-Nov-23	Elvis
ACS symposium series ebook	October 2023	2	2	8-Nov-23	Ringo
Recent Researches In Music Online	October 2023	9	9	13-Nov-23	Sting
SpringerLink eBooks	October 2023	211	211	14-Nov-23	Tina
Docuseek2	missing record	1	1	14-Nov-23	Aretha

Results and Discussion

After the month-long data collection phase had concluded, the department head reviewed all the workbooks. He noticed that some individuals varied in how they reported meetings versus trainings. Some grouped meetings within the department or library in the same category as attending webinars or other professional development events. Others separated them into

different categories and made more use of the “other” category. Because of this discrepancy, and after discussion with the department, the department head decided to standardize the coding in the individual worksheets. He also decided to remove full days from the analysis to focus the results on tasks done at work.

The distribution of time spent on activities is illustrated in Table 2. Regular cataloging took up the greatest percentage of time at 30.63 percent. Email and using Microsoft Teams came in second at 14.82 percent.

Table 2. Percentage of time spent on activities

Activity	**Percentage of time spent on activity**
Regular cataloging	30.63
Email/Teams	14.82
Other	11.29
Meetings	10.89
Administrative	7.34
Scholarship	3.86
Service	3.59
Unusual cataloging	0.85

After analyzing the time-based results for each individual and collectively by the department, the department head shared the results with employees. The department then met to discuss the results and talk about the next steps.

The department head also reviewed the time-based results in conjunction with the cataloging statistics workbooks to get a more comprehensive view of assignments and cataloging performance. After discussing the results with individual employees and listening to their concerns, he redistributed some electronic resource package editing and loading assignments to rebalance workloads. He also decreased the number of meetings in the department.

Finally, about six months after the study, the department head followed up with employees affected by the redistributed work to ensure the assignments still felt equitable from their perspective. The employees reported less overwhelm thanks to the redistribution because they

had more time to edit, review, and load e-resource records before the next month brought more records. The department head also reviewed the cataloging statistics workbooks and verified that work was more evenly distributed based on the number of records cataloged by each person per month. Additionally, the whole department reported they appreciated the less frequent and more focused meetings, which led to a general sense of improved efficiency as they were able to focus on cataloging rather than time in meetings.

Conclusion

After conducting this project, the department head had a much clearer understanding of individual workloads. He was able to use the evidence collected in the project to make informed decisions about redistributing assignments so that workloads would be more manageable and equitable. The redistribution process also identified cross-training needs and allowed him to see who had enough time to start training and who needed to wait until a more conducive time for their training.

The success of the project was contingent on the data that employees reported about their work activities. Employees were motivated to report accurate data because the department head established a climate of trust from the beginning of his tenure. He was transparent in sharing information whenever possible and inspired trust by encouraging employees to share their ideas and giving them thoughtful consideration. Employees also participated fully in this project because they were involved in the planning process from the outset.

Cataloging departments change over time with shifts in staffing, management, responsibilities, and productivity concerns. Now that the Cataloging and Metadata Services Department has tested its workload analysis framework, it can be improved with clearer category definitions. It will be used again over a longer period of time to continue to assess the distribution of assignments and improve departmental operations.

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Declaration of Interest Statement

The authors report there are no competing interests to declare.

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