

The Real Cost of ILS Ownership

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The ILS Marketplace

In 2002, libraries spent more than \$530 million on library systems and related services. Among academic, public and research libraries, more than 800 either migrated to a new integrated library system (ILS) or significantly upgraded their existing one.¹ (These figures include the major ILS vendors in these markets: Dynix, Endeavor Information Systems, Ex Libris, Innovative Interfaces, Sirsi, TLC/CARL, and VTLS.) Library automation expert Marshall Breeding, in *Library Journal*, further estimates that 3,767 libraries are operating on legacy systems that will require replacement within the next three to five years.¹

Clearly, the decision to move to a new ILS is a significant one for any library. Given the sheer amount of money involved and the number of libraries undertaking this decision, it's important to consider the criteria on which purchase decisions are based. Most libraries approach the decision carefully, using an extended RFP process to gather information, evaluate their options, and purchase as a capital expense. Criteria typically include functionality, vendor responsiveness, and of course price. But are these sufficient? Are there additional factors that deserve consideration?

The purchase and annual maintenance costs of an ILS represent only a small portion of the overall cost of operating that system in the context of the workflow it is intended to support. Librarians need a more comprehensive model for evaluating library automation systems, especially one that incorporates the post-implementation environment—when the system is actually in operation. Especially important is fuller consideration of access, administration, and technical services modules, as these functions are often under-represented in purchasing decisions—resulting in higher than necessary staff costs and backlogs. For example, the degree to which an ILS is truly integrated—i.e., how efficiently a user can move among modules and to external resources—plays an important role. To accommodate long-term needs, a flexible core structure that supports a broad range of digital solutions is essential. This paper seeks to

expand and reframe the criteria for choosing an ILS to include those elements, because, according to a recent study:

“Costs incurred after initial deployment can comprise up to 80 percent of IT cost, yet many decision-makers focus on controlling IT capital costs rather than post-deployment costs.”²

If we broaden the focus to consider system operation, maintenance and selection-to-access workflows, we can discern some of the “hidden costs” of an ILS. These become clear as new users attempt to implement automated support for selection, ordering, claiming, receiving, cataloging, payment, and provision of user access. Systems librarians may spend more hours than expected configuring import profiles, installing client software, generating reports, and writing customized scripts. As staff wrestle with bibliographic records, item records, holdings records, data mapping, electronic ordering and invoicing, fund relationships, interfaces with materials vendors, and a host of other tasks, more potential costs come to light. These are bound up in workarounds, manual intervention, lost productivity, and missed opportunities that can result from gaps in system capability. Conversely, the workflow savings that accrue from a well-implemented, well-functioning ILS become clearer.

In the end, it is hoped that this document compels every librarian to ask broader questions about ILS costs and benefits. It is especially important that librarians understand that the initial purchase and maintenance fees represent only the visible portion of system costs. How well the system is implemented and how well administrators and users are initially trained can affect efficiency in all areas of the library workflow, from bibliographic instruction to order placement and claiming. To draw an accurate comparison among library systems requires that all of these cost factors be identified—regardless of whether the dollars are paid directly to the ILS vendor or are absorbed by extra staff costs or “hidden” as backlogs, or limited access. We'll use a concept known as Total Cost of Ownership (TCO), which is highly developed in the commercial world, to guide our considerations.

Total Cost of Ownership (TCO)

Total cost of ownership offers a way of thinking about technology investments that attempts to “examine all the direct and indirect costs over the life of the product/service.”³ Sometimes described as “lifecycle costing,” this discipline has grown out of a need to accurately compare hardware and software offerings of different vendors. Perhaps the clearest definition is this:

“Total cost of ownership (TCO) is the total cost of owning a particular item over some time horizon and includes both the acquisition cost and the total cost per year. [...] The strength of TCO is in providing an understanding of future costs that may not be apparent when an item is initially purchased.”⁴

The ability to identify potentially unforeseen costs and thus reframe the basis for comparison makes TCO attractive to purchasing and budgeting departments in the corporate world. The technique has also been used in education, especially for calculating TCO of computers and networking for school districts. TCO is as much about management, use of staff time, and best workflow practices as it is about system reliability and quality.

The literature emphasizes that there is no such thing as a “generic” TCO model and calculation of TCO for a given system in a given library will depend on many local factors. Our intent here is simply to examine elements of TCO that apply to the purchase of an ILS.

TCO Components and Models

We’ve reviewed numerous TCO models for common characteristics, and have identified three broad approaches that might help libraries consider system costs more fully. We also introduce a fourth approach, which consolidates decision-making criteria into a single graphic.

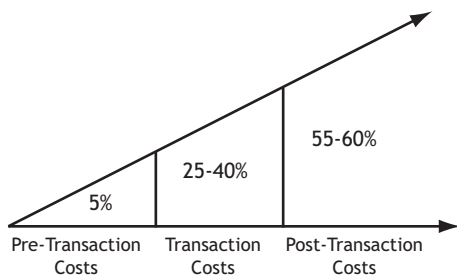


Figure 1: Transaction-Sequence Components

Transaction-Sequence Components³

This approach (Figure 1) identifies cost components before, during, and after the purchase decision. In each segment, it’s important to consider both direct and indirect costs, e.g., not only the salary of those participating in selection and implementation, but also the cost of other work that may be deferred or ignored while they focus on selection and migration.

Pre-Transaction Cost Components

Pre-transaction costs relate to the RFP process. These costs are significant and may benefit from some scrutiny, but are constant for all ILS vendors under consideration, and therefore don’t affect decision-making.

Transaction Cost Components

Transaction costs, which revolve around pricing of hardware, software, and maintenance, are typically the focus of most attention.

Post-Transaction Cost Components

Post-transaction costs include implementation, system operation, integration with workflows and third parties, customization, and trouble-shooting. They are often not given sufficient weight by library decision-makers, in part because they are difficult to quantify.

People-Process-Technology as TCO Drivers

People-process-technology as TCO drivers² offer another way of looking at costs. This model does not consider finance, or the cost of capital, but does afford work processes equal weight as a cost driver.

People

Training system administrators and users, local tech support

Processes

Workflow and data flow; (loss of productivity; need to convert data or adapt procedures to system)

Technology

Functionality, ease of implementation, ease of upgrades, training, reliability, continued development (influenced by technology platform, and programming languages), platform suitability

Work-Centered Analysis

Work-centered analysis⁵ “evaluates an information system within the framework of the organization” and puts the individual library and its workflow at the center of the purchase decision. Proponents contend that implementation and maintenance of systems is almost always more expensive than expected or budgeted. The needs for adequate planning, robust testing, support for data migration and clean-up, and complete training are often greater than the resources available. But these unmet needs do not disappear, and can lead to substantial “hidden” costs later. In the words of a former implementation consultant, “If you don’t think about workflow processes when you select a new system, you might not be able to fully utilize your new software, ending up with a very expensive substitute for your old system.”¹⁰

A New TCO Model for Library Systems

Drawing from these and other models, we propose a new four-tiered representation of the major components of TCO for the ILS (Figure 2).

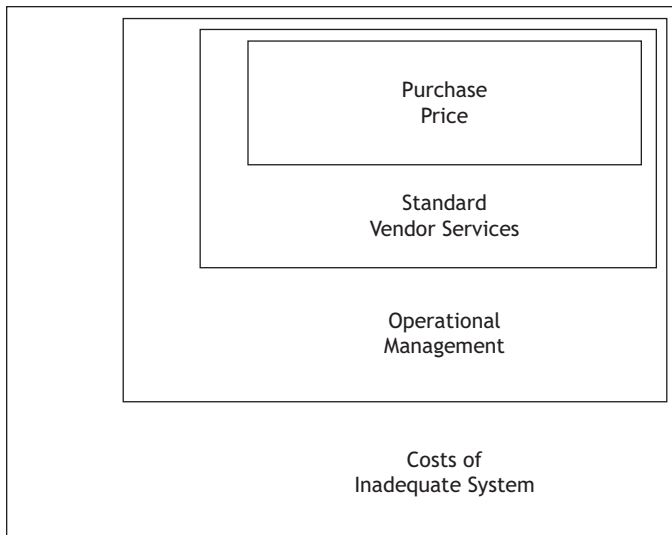


Figure 2: New Model of TCO for Library Systems

Purchase Price

Included here is the cost of the base system as well as those additional modules required to meet your library's primary operational and service requirements. Obviously, the negotiated price should not extend beyond the true value of the system, but we propose that minimizing cost here is likely to incur greater costs later.

Standard Vendor Services

Usually—and this varies between vendors—the base system price will include vendor support for migration, testing, and training. Ongoing maintenance agreements, customer service, and technical support also reside in this frame. Some of these costs are incurred at point of purchase, while others extend on an annual basis throughout the life of the product. The level of vendor commitment and expertise in these areas will dramatically affect operational management costs in the subsequent frame.

Operational Management

Full utilization of the ILS requires strong hands-on management and broad knowledge of system capabilities and patron expectations. These operational tasks and costs will persist throughout the life of the system. It is here that costs can vary most among ILS vendors. An ILS that supports an efficient automated workflow, along with an easily updated and fully utilized system, will save money. System design, technology platform, and active vendor support are critical in controlling costs here.

Costs of an Inadequate System

Integrated library systems are replaced when patrons are dissatisfied by out-dated functionality and operational inefficiencies have become too costly. Inadequate and underutilized systems incur replacement costs far earlier than necessary. Full lifecycle costing, then, must include these sometimes hidden, long term costs to the library and the library's mission.

Hidden Costs in the Library Workflow

The work of the implementation team is to understand exactly what functionality is available now, without customization or additional modules or waiting for the next release.

Implementation requires bedrock facts about basic processes: which data can be converted without being changed? How does fiscal year rollover work? What reports can be run by users and administrators? Are book or serial vendor interfaces assured for this system? Has the EDI capability actually been used by another library? What match points are offered for duplication detection? How many steps are required to update a holdings record?

These questions arise naturally from consideration of the library's workflow. In order to ask the right questions, the library must first analyze its existing workflow, and look in detail at the way tasks are accomplished. This is useful at any time, but never more so than prior to a system migration, because workflow requirements should serve as primary criteria for choosing, and then implementing and maintaining a new system. *The consideration of systems in light of workflow needs provides the best opportunity to optimize the value of both.*

Using this approach to consider each stage in the workflow, choices can be made about implementation and ongoing operation. Do we adapt the work process to the system's limitations? Do we live with the gap? These are choices that have immediate cost implications. Real costs, functional trade-offs and missed opportunities may not show up on the balance sheet at time of purchase. The degree to which an ILS can minimize these problems adds value to their offering, and substantial weight should be given to this when evaluating ILS proposals.

Another area to consider is the depth of support provided. As Patricia Barreau notes, "Vendor support alone is rarely sufficient for system back-up, report generation, user support, and problem solving."⁵ But there is a spectrum of vendor support, and the more high-quality support an ILS vendor provides, the less need for local resources to fill the void. Effectiveness and availability of vendor support should be weighted heavily when considering initial purchase price and maintenance fees. Good vendor support saves time and money.

In a library that seeks to optimize its use of automation or has already done so, workflows and processes are closely tied to data flow, and are heavily reliant on the ILS and integration with third party systems. The division between technical service and public services becomes permeable, since any data presented to the patron has originally been downloaded or created by technical services. Therefore, it's important that the ILS support the technical services workflow as fully as it supports OPAC searching.

However, support for technical services among ILS vendors varies more than do public services offerings—and technical services often don't get equal weight in the library's decision criteria. The idea that "only staff will see it" or "it only affects cataloging" is sometimes tacitly accepted in search of a lower initial price. That lower initial price, however, may be subsidized by additional staff needed to compensate for inadequate functionality, or, if staff is not available, by tolerance of backlogs in ordering, receiving, or cataloging. These factors in turn generate a need for more management attention. All of these workflow-related costs and their impact on library service can be significant and should be factored into any TCO considerations.

Consider that the average salary of a library technician is \$25,320.⁶ The average salary of a supervisor of support staff is \$44,549.⁷ If we add an average benefits cost of 27.9%⁸ to each of these figures, the annual costs become \$32,384 and \$56,978 respectively. Assuming 220 workdays per year, the cost of one day's time for a library technician is approximately \$147 and for a supervisor is \$260. Every day required to offset system deficiencies ought to be included in total cost of ownership.

Hidden Costs in System Operation and Maintenance

Post-implementation costs such as ongoing operation, maintenance, and administration may not be readily apparent. Many tasks require the attention of systems librarians, programmers, and IT support personnel—often among the most highly paid library staff. Average annual salary for a systems administrator, for instance, is \$44,010, while the average for a supervising librarian is \$55,000.⁶ Adding 27.9% for benefits⁸ brings these rates to \$56,288 and \$70,345 respectively. Daily rates, based on 220 workdays per year, are \$256 and \$320. In addition, if the ILS requires the attention of an Oracle database administrator, as many do, the daily cost would be \$339, based on the 2001 mean annual salary of \$58,420.⁹

Some library automation systems require more attention from IT staff than others. For instance, when systems librarians or programmers must configure data import tables or generate reports, costs are higher than when staff at many levels can handle these tasks. Writing local scripts to support interfaces with material vendor systems or other external sources can be minimized when that functionality is well developed in the base system. Self-installing client software clearly saves time and effort when compared to the need to update every workstation individually. Software that runs by design on multiple platforms requires less attention and fine-tuning than that designed for a specific operating environment. A chart of representative tasks such as that shown in Figure 3 can assist in comparing system operating costs.

	System A	System B	System C
Report Writing	No Report Writer (needs development) \$\$\$\$\$	SQL-Based Reports (requires SQL expertise) \$\$\$	Integrated Reports (any library staff generate reports) \$
Client Software Upgrades	Mounted on network; downloaded by operator at workstation \$\$	Mounted on network; downloaded by operator at workstation \$\$	Automatically installed upon login no cost
etc...			

Figure 3: Comparison of System Operating Costs

In daily operation, hidden or deflected costs arise when software isn't fully developed or debugged, again more prevalent in technical services modules because of their lower profile. The extent to which modules are truly integrated can save clicks, keystrokes, and login/logouts. But if order placement or claiming requires more steps in one system than another, those extra keystrokes and mouse clicks represent small but chronic

costs. If de-duplication of records is based on inadequate criteria, it increases the need for searching. In short, everywhere the software doesn't work as expected will cost the library additional staff hours in workflow and in operation.

To summarize the potential of hidden costs outlined above:

Daily cost of library technician:	\$147
Daily cost of supervision for support staff:	\$260
Daily cost of systems administrator:	\$256
Daily cost of supervising librarian for systems:	\$320
Daily cost of database administrator:	\$339

A system that requires an extra three days a week of staff time (\$22,932), and an extra two days per month of systems librarian time (\$6,144) costs an extra \$29,076 per year to run. If involvement of the systems librarian were required 3 days a week, annual operating costs would increase by \$33,792, to \$62,868. Addition of even one day per week of a database administrator's time brings the annual total to \$80,496.

Representative Tasks

To consider the relationship of ILS and workflow closely, we suggest thinking through a representative task as part of an ILS cost evaluation. On the technical services side, creating an order for a monograph can illuminate potential hidden costs. Close scrutiny of the steps involved will identify those points at which the ILS could save searching or keystrokes or moving from one module to another. For system operations and maintenance, we suggest looking at what is required to generate reports and statistics.

Existing order processes can be assessed to determine the degree of automated support a new system might provide. Figure 4 outlines those steps in detail, and highlights potential problem areas, where double searching or double keying might occur.

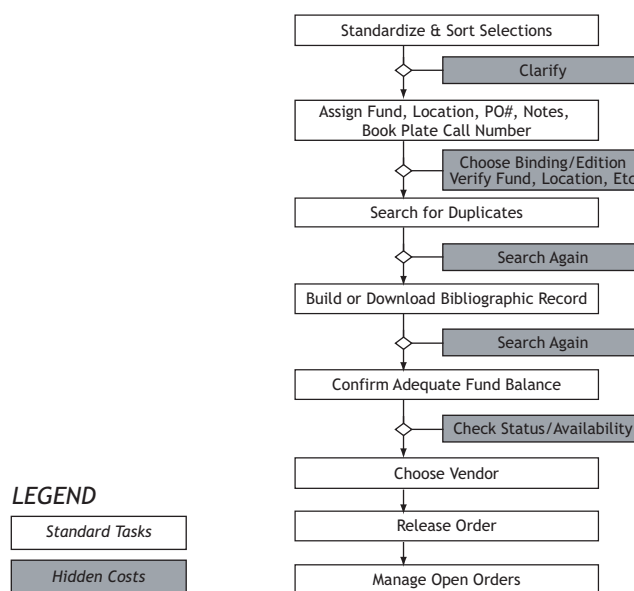


Figure 4: Representative Transaction: Book Ordering

It is not unusual, in a manual system, for each item to be searched three, four, or five times—and some ILS implementations mimic the manual process. Only a detailed analysis can confirm this and help determine whether savings or cost will be realized within a given system—or whether staff time will continue to be required at the same level.

Production of management and operations reports is another area where ILS capabilities diverge widely. In addition to unique bibliographic, holdings, circulation and patron data, critical fund accounting and vendor transaction data reside in the ILS. When the base system automatically integrates and tracks disparate data, useful and timely reports can be produced. Convenient output of pre-configured or customizable reports will save significant management time, not only in production of reports, but because better information leads to better decisions.

In libraries where expertise in MS Access or other third-party database programs is required, it's not unusual that a computer support specialist or analyst (\$40,928 per year) would be employed to extract data and compile reports. In evaluating an ILS, decide first what reports are essential to your library, and look closely at the steps involved in obtaining them. Remember that forgoing some reporting information (because it's difficult to produce) can also lead to hidden costs.

Grounds for Competition

The major integrated library systems can claim to share much of the same functionality. Our emphasis on expanding the definition of cost (and benefit) is intended to assist with accurate comparison, and to encourage libraries to look beyond the initial price tag when purchasing a system. Assuming for the moment that the purchase price of the major systems is similar, then what are the grounds for competition? What essential factors might tip the scale in a library purchase decision?

- Software that works as expected immediately
- Software that conforms to library workflows and user needs
- Degree of integration among modules
- Frequency of new releases
- Understanding of library workflows and user needs
- Communication
 - Effective user groups
 - An array of training alternatives: onsite training, online tutorials, Web conferencing
 - Effective relationships with third-party vendors
- Current Technology
 - Third vs. fourth-generation system architecture (Windows vs. Web)
 - Platform independence
- Support
 - Effective 24/7/365 help desk
 - High ratio of support staff to active sites
- Enhancements
 - Degree of user input
 - How prioritized and managed
- Development track record
- Financial stability

Competition among ILS vendors has always been based on technology and service. Some areas of technology-based competition remain, not only in new products and quality of software design, but also in system maintenance and operation. Developing Web-enabled software that can run on multiple platforms, for instance, speeds introduction of new releases and updates, and eliminates the need to install client software on individual workstations. Some software development environments (e.g., Java) enable code to be written more efficiently, setting a faster pace for introduction of new capabilities. And new ideas that resonate in the market always provide an edge.

With regard to service, we construe this broadly, to encompass all aspects of communication with library customers—and to include listening as well as speaking. Although other libraries usually provide the best source for information regarding a vendor's performance, it's worth reviewing the following checklist to help sort out competing claims among vendors:

- Are software releases delivered regularly?
- Are all modules enhanced every year?
- Do new releases include new functionality and substantial enhancements, or do they mainly remedy problems with previous releases?
- Are updated versions of client software delivered automatically upon login? Or must users retrieve the updates, or manually update each PC?
- Does the system provide real-time indexing, with up-to-the-minute status information on circulation and orders?
- How helpful and informed are the company's product managers? How accessible?
- Is the user documentation up-to-date?
- Is there 24/7/365 user support, with live staffing?
- Is there a customer service website where customers can learn the status of reported issues?
- How does the company treat customer suggestions, requests for enhancements, and complaints?
- How well does the vendor understand library processes?
- How fully are individual modules integrated—e.g., Web access from cataloging module?
- Is program expertise (e.g., MS Access) required to run reports, or can any level of staff generate a customized report?
- Can statistical reports be run on demand?
- Can the vendor help the library recognize where their system could do more?

In the final analysis, the value of an ILS is determined by the degree to which it can be adapted to a given library's situation. To maximize that value requires a full understanding of what's needed and a full knowledge of the system's capabilities. The ability to incorporate these two viewpoints into customer support and communication will lead to opportunities for both library and vendor, and will increasingly set ILS companies apart from one another.

Balancing Present and Future Costs

The very notion of ILS is undergoing radical change. Portals—including meta-search capability, access control, OpenURL linking, and management of digital collections, in addition to legacy ILS functions, are on everyone’s mind, if not their desktop. A particularly prescient observer in 1996 described the situation like this: “Increasingly, expectations are that integration will include interfaces with other databases, with networks, with the World Wide Web, with libraries’ previous systems, and with libraries’ vendors.”¹¹

The cost of developing this future is also a real cost, and must be factored into library considerations. The proportion of a company’s development budget spent on the future signals its commitment to both current and future products. To state the obvious, both are needed; it’s critical that an ILS vendor maintain a judicious balance between supporting and improving current systems while designing the next generation. Although this approach is more costly for all concerned, it benefits customers as they face their own future.

How, then, does the expanded view described in the preceding pages influence a library’s selection of a new system? Figure 5 is intended to demonstrate the argument by comparing two occurrences of the new rubric. Each represents a different choice at point of purchase.

The point is simple: money “saved” on the ILS purchase will likely be spent later to compensate for those “savings.” Phrased differently by another writer: “To ensure that gains are greater than costs, select candidate systems best qualified to meet the [workflow] needs and choose the system that most closely approximates how the organization works. Let [initial] cost be only one factor in the decision. Saving a few dollars on purchase can result in spending thousands on adjustments later on.”¹⁵

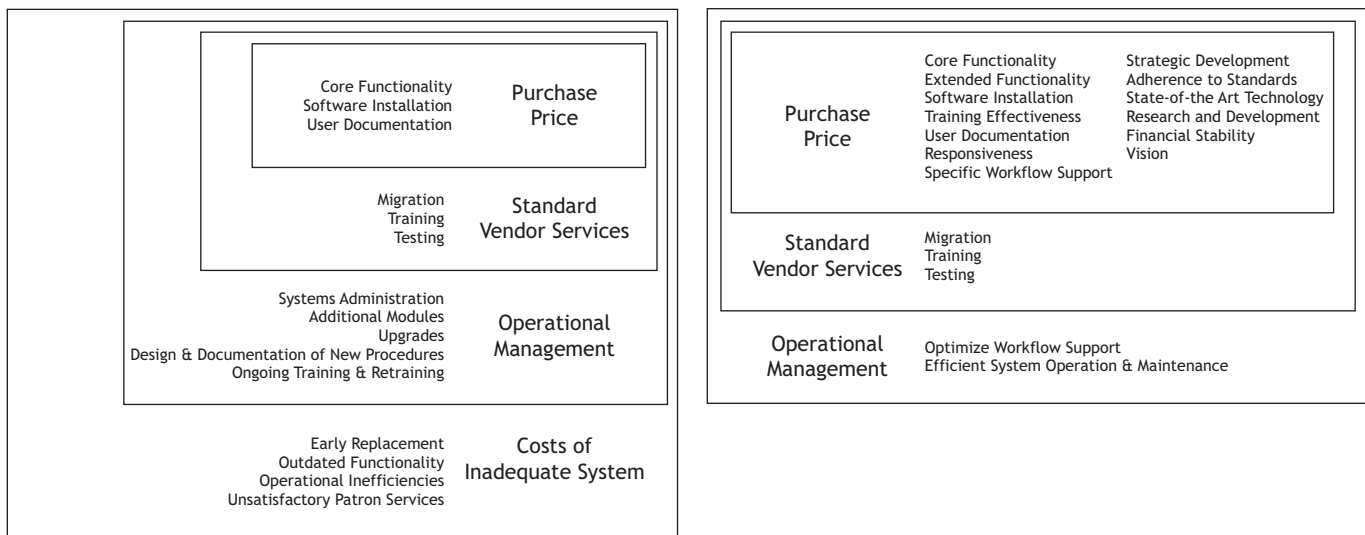


Figure 5: Relation of Purchase Price to TCO

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