Project Deliverable B:

Technology Inventory and Assessment

Executive Summary

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Executive Summary

Introduction

This study was primarily a descriptive study undertaken as part of the Z Texas Implementation Component of the Library of Texas (ZLOT) project at the Texas Center for Digital Knowledge, University of North Texas. The Texas State Library and Archives Commission sponsors the ZLOT project. The study employed a 75-question survey instrument to measure the technology capabilities of academic and public libraries that are members of TexShare. Additionally, the questionnaire measured some potential challenges to library participation in the Library of Texas. The questionnaire was mailed to 147 academic libraries and 551 public libraries. Participants could submit their responses either via the web using an online survey or via mail using the paper survey. In all, 53% or 368 libraries participated, including 75 academic libraries and 293 public libraries.

There were three primary objectives in conducting this study. The first objective was to determine any significant defining characteristics in libraries according to their rate of technology adoption, that is, early, middle, or late adopters of technology. The second objective was to identify the technology capabilities of Texas libraries to participate in a Proof of Concept demonstration for the LOT Resource Discovery Service. The third objective was to identify possible challenges to widespread participation in the LOT on the part of academic and public libraries in Texas.

Key Findings

Characteristics of Early, Middle, and Late Technology Adopters

- In this study, the total number of libraries in each technology adoption category is roughly the same. Of the 368 libraries that participated, 130 were classified as early technology adopters, 115 as middle technology adopters, and 123 as late technology adopters.

- The proportion of academic and public libraries differs substantially by adoption category. A higher proportion of academic libraries are early adopters of technology and a higher proportion of public libraries are middle and late adopters of technology.

- A higher percentage of large libraries (77%) are early technology adopters compared to small libraries (18%). Also, a very small percentage of large libraries (3%) are late adopters while 50% of small libraries fall into this category.

Library Automation Systems

- Eight library automation systems comprise 80% of the installed base within responding libraries: Athena, Winnebago, Sirsi, Follett, Dynix, Horizon, Innovative Interfaces, and Endeavor. Early technology adopters more frequently install Sirsi, Horizon, and Innovative Interfaces systems. Middle and late adopters tend to install Athena and Winnebago Spectrum systems more often.

- Twenty-five percent of libraries with automation systems report they do not budget for upgrades to their automation systems. A highly significant difference was discovered among the technology adoption categories in this regard. The proportion of late adopters that do not budget for upgrades is significantly greater than would be expected. Among early adopters, only two of the 126 libraries reported they did not budget for upgrades.

- A higher percentage of early adopters reported using a dedicated technical staff in their libraries compared to middle and late adopters. A higher percentage of late adopters reported having minimal or no technical support staff compared to early and middle adopters. Early adopters reported lower usage of on-call vendor support than either middle or late adopters.

Z39.50

- 43% of responding libraries' automation systems include Z39.50 servers and 51% include Z39.50 clients.
- A significantly higher proportion of early adopters' automation systems include Z39.50 servers.
- 56% of the responding libraries that report their automation system includes a Z39.50 server also indicate that their Z39.50 server is running. A higher percentage of early technology adopters (69%) are running their available Z39.50 servers than either middle adopters (50%) or late adopters (33%).
- There is a highly significant association between technology adoption and libraries whose automation systems have Z39.50 clients. A higher proportion of early adopters' automation systems include Z39.50 clients than would be expected.
- Sixty-four percent (64%) of the automation systems that include Z39.50 clients are running. Only moderate differences in the percentage of clients running exist among the technology adoption categories. Respondents indicate that their primary utilization of the Z39.50 client was among their staff for technical services.

Information Resources

- There is a highly significant association between technology adoption and the number of records in a library's online catalog. Early technology adopters have a higher percentage of their records in the ranges of 50,001-250,000 (37%) and 250,001-1,000,000 (25%). This is in contrast to late technology adopters, 75% of whom have between zero and 25,000 records in their online catalogs.
- The vast majority of libraries (81%) use MARC-compliant holdings format in their automation systems. A significantly higher percentage of early adopters embed their holdings information in catalog records (8%) or in separate records (9%).
- Of the responding libraries, 58% make their catalog accessible via the Internet. A higher percentage of early adopters (91%) catalogs are Internet-accessible compared with late adopters (19%).

Internet Services

- Nearly 70% of all libraries have a web site. There is a highly significant difference in the proportion of libraries having a website based on their technology adoption category. The largest difference is between early adopters, of whom 100% have web sites, and late adopters, of whom only 29% have web sites.
- Of the libraries with websites, 42% are located on a server within the library and 58% are on a server hosted by some department or organization external to the library. Regardless of server location, in 73% of libraries the library staff maintains the web site. Significantly more late adopters have an external organization maintaining their web site.
- By far, the leading service available on 98% of library web sites is information about the library. 86% of the libraries report their catalog is web-accessible. The next five services available in rank-order are: Reference (48%), Holds (41%), Renewals (36%), ILL (31%), and Account Management (27%). Early and middle adopters offer each of the six leading services to some degree while late adopters reported they did not offer Renewals, Holds, or Account Management services.

- Overall, 87% of libraries have a local area network (LAN). There is a highly significant difference in the percent of libraries having a LAN based on technology adoption group. Significantly more late adopters do not have local area networks.

- More libraries (44%) use a T-1 connection to access the Internet than any other type of connection while only about 7% use dialup connections. However, there are highly significant differences in Internet connections based on technology adoption categories. Far more late adopters access the Internet via Dialup (20%) and ISDN (37%) services and far fewer late adopters are using T1 (19%) and T3 (0%) connection types. This contrasts significantly with the early adopters. Far fewer early adopters use Dialup (0%) and ISDN (3.2%) connection types and far more early adopters use T1 (69%) and T3 or Frame Relay (14%).

Needs

- The majority of responding libraries (72%) state they currently have a sufficient number of computers with Internet access to meet the needs of their patrons. Likewise, 71% of the libraries predicted their current Internet access connection type would meet the needs of their patrons through the next year. There were no significant differences based on technology adoption category for either of these two questions.

- There were significant differences between the adoption categories regarding the importance of increasing their dedicated support staffs in two areas:

    1. More early adopters placed higher importance on increasing the dedicated staff in support of management of their library's automation system.

    2. For late and middle adopters, increasing their dedicated staff for the management of networking and Internet access is significantly more important than it is to early adopters.

- The priority need for external funding across all of the libraries is for library automation system training. There are significant differences in priorities between the adoption groups in three training areas: computer support, virtual reference, and technical services. Computer support training is less important to early adopters while virtual reference training is more important to this group. More late adopters ranked technical services training higher in priority.

Challenges for the Library of Texas

- Overall, libraries expect the LOT will address the needs of their patrons, are open to sharing their resources with Texas citizens, do perceive a value in a statewide virtual library, and are currently using the TexShare databases.

- There is a significant relationship between staff and patron usage of the TexShare databases and the technology adoption categories. Libraries in the late adopter category differ significantly from early and middle adopters. A higher percentage of late adopters disagree that their staff and their patrons use the TexShare databases.

- A highly significant relationship exists between library support of the vision for the Library of Texas in their plans and budgets and the technology adoption categories. Significantly more late adopters disagree that their future plans support the vision of the Library of Texas and the concept of a virtual library to meet their patrons' needs.

- Sixty-one percent of libraries do have a technology plan. There was a significant difference in the percentages of libraries with a plan based on technology adoption group. More late adopters (53%) indicated they did not have a technology plan.

Conclusions and Recommendations

- The inclusion of small public libraries with late technology adoption characteristics emerges in this study as a major concern for the Library of Texas. The vast majority (94%) of the 87 small libraries classified as late technology adopters in this study are not ready to participate in the emerging Virtual Catalog application of the Library of Texas.

- Clearly, there are significant differences between the libraries in this study based on the pace with which they adopt technology. Because the libraries of Texas mirror those in this study, the implications of these differences can be carefully generalized. The implications extend to all the areas addressed in this study: library automation systems, Z39.50, information resources, Internet services, and needs.

- The substantial embedded base of Z39.50 servers and clients included in libraries' automation systems bodes well for the endorsement of Z39.50 as a standards-based approach to the LOT Virtual Catalog application. It will be important to adopt a Z39.50 profile in support of interoperability. The Texas Z Profile is a prime candidate for this.

- It appears that the near-term Internet infrastructure needs of libraries have largely been addressed. However, late adopters are still disproportionately using dialup and ISDN facilities to access the Internet. Migration to higher speeds for these libraries might be critical to their successful inclusion in LOT services that are dependent on higher access speeds to ensure an acceptable quality of service.

- Training and staffing related to libraries' automation systems is a major priority and funding need for libraries. The number one need for external funding in support of training is for library automation system training.

- Currently 70% of libraries have a website but only 58% have web-accessible catalogs. In order to continue to expand web-based services, the identified need for web-related skills training should be addressed.

- There are two areas that present challenges to widespread library participation in the LOT.

    - An apparent lack of understanding of the vision of the LOT among all libraries
    - An apparent lower level of usage of the TexShare databases among both staff and patrons at late adopter libraries

In sum, to ensure the widest possible participation of Texas libraries, it will be important to design the LOT for different levels of technology adoption. In particular, late technology adopters have unique characteristics that provide challenges to the widespread adoption and success of new technology-enabled services, such as those being identified for the Library of Texas. A follow-on study of the late adopter libraries is recommended with a goal of understanding the reasons behind the gaps between them and early technology adopters and identifying possible solutions to narrow the gaps.