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Message from the Editor-in-Chief

In this issue of CALA OPS, Lan Shen suspected that one of the obstacles in digital library development could be the lack of collaboration and integration between the IT staff and librarians.

At this writing, there are two manuscripts in the pipeline. I hope I will have the opportunity to present them to you before I complete my term in July 2009. The reviewers for CALA OPS thus far have included Qi Chen, Allan Cho, Mee-Len Hom, Judy Jeng, Shuyong Jiang, Chihfeng Lin, Susan Matveyeva, Junlin Pan, Kwong Vincci, and Yunshan Ye.

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Organizational and Operational Optimization of Academic Library and Information Technology

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Organizational and Operational Optimization of Academic Library and Information Technology

Abstract:

In light of the development of the digital library, the deficiencies of collaboration and integration between the Information Technology unit and the Library on campus have created numerous obstacles to maintaining high-quality and effective digital library services. In an effort to optimize information resources and to improve library electronic services, this paper addresses the challenges and opportunities of administrative and organizational restructuring of library services and information technology (IT). First of all, this paper discusses the rationale of integrating both IT and library organizations and operations based on case studies from various academic libraries in the United States. In addition, it examines obstacles to integrating the two units with respect to issues concerning purposes, budget, personnel, and collaboration. Finally, this paper highlights principles of organizational and operational integration between IT and the library through studying some successful cases.

I. Introduction

In view of the dramatic changes in library services in the digital era, the lack of administrative collaboration and organizational integration between the unit of information technology (IT) and the library has generated various obstacles to maintaining high-quality and effective digital library services. As early as 1979, William Matthews (1979) had proposed possible collaboration and alignment between library and IT in dealing with operating changes, negotiating a continuing relationship, and improving tolerance and mutual respect. In1984, Patricia Battin (1984) advocated for integration of both computer center and the library in order to "provide one-stop shopping for the university community as well as a stabilizing planning mechanism for effective and flexible response to rapidly changing technologies" (p. 17).

However, since the 1980s, there have been various misunderstandings, misperceptions, and misinterpretations regarding the desirability of merging IT and the library. For instance, merger of the two units was misunderstood as an effort of 1) saving money; 2) combining physical organizations; and 3) dealing with personnel politics (Riggs, 2000, p. vii). Also, some university administrators had a mistaken assumption that "libraries would no longer be needed as physical locations, or even as organization," because "all information was now readily available, for free and needing no intervention or maintenance, on the Internet" (Bolin, 2005, p. 5). As a result, many failed cases of the merger have discouraged further development and perfection of the integrated information technology services. For example, Gettysburg College, the University of Kentucky, Utah State University, and Oregon State University used to combine the library and IT under a non-librarian administrator, but now all have returned to a traditional arrangement of a separate administration for the library and the IT department (Bolin, 2005, p. 4).

Yet the trends of library digitization are rapidly moving forward and with no signs of alteration or regress in the near future, because "fewer and fewer services require that users physically enter the library building" (Borgman, 2003, p. 653). Additionally, "the combination of information technology and library science creates new jobs as well as emergent demand for digital librarians" (Chiu, 2007, abstract). Therefore, in an effort to optimize information resources and improve the quality of digital libraries, this paper will address possible administrative restructuring and organizational integration between library services and information technology. The first part of the paper will discuss the rationale of integrating both IT and library organizations based on case studies of academic libraries in the United States. In addition, it will examine obstacles to integrating the two units in order to improve the balance of centralized planning and decentralized operation, and the balance between centralized resource allocation and decentralized resource management. Finally, this study will highlight optimization of organizational integration between IT and the library through evaluating some successful cases.

II. The Rationale of IT and Library Merger

Even after university administrators, librarians, and technical staff debated this for more than 30 years, the needs of IT and library merger are still disputed. Therefore, it remains necessary to address the rationale for such a proposed or anticipated merger. In view of the previous and current practices, there are at least three key reasons in favor of integrating the IT department and the library.

First, given the trend of declining number of general circulations, face-to-face reference transactions, and in-house use of items in academic libraries (Kyrillidou & Bland, 2008), and due to the increasing number of virtual users on campus, librarians have come to the realization that incorporating IT into the library would enhance the latter's legitimacy, attract more patrons to use electronic services and facilities in the library, and provide unlimited information access within a limited space. Librarians have also recognized that adding IT human capital and resource may also rescue the deteriorating library as a traditional learning space. On the other hand, the traditional image of the IT unit may be transformed from a computer center or technology supporter to a major player of information provision after the merger. As a result, IT staff will be promoted from a technician to information professional. At this point, "no one should feel threatened that someone is encroaching on his or her turf" (Setze & Jordan, 2000, p. 59).

Seiden and Kathman (2000) correctly note that "in the library, technology moved from the 'back room' or automation of processing, to the reference desk with computer-based indexes and other resources" (p. 7). As Neff (2000) mentions, "nearly every campus is embracing information technology; academic libraries are increasingly dependent on information technology; and intercampus networking is providing a basis for consortia sharing of both library resources and computing services" (p. 38). Also, various e-library and invisible libraries make the integration of library and IT necessary through facilitating "information commons" and "digital unions" (AckerBy & Miller, 2004). Therefore, demands for the integration of information services in a new teaching and learning environment has made it necessary for the merger of the two in order to help the library survive and thrive.

Second, the dramatic increase of users' demand for IT support while using library services require effective collaboration between the two. Since academic library patrons need a variety of research guidance and technical support to access information in digital sources, hardware, and software, librarians themselves find it difficult, if not impossible, to deal with all the complicated issues without effective assistance by IT staff (Bailey & Tierney, 2002, p. 277). Traditionally, "IT supports technology and libraries provide content" (Farrelly & Carmean, 2006), but "it is no surprise that the traditional library we inherit today is not the library of the future…. Significantly, the library must serve as the principal building on campus where one can truly experience and benefit from the centrality of an institution's intellectual community" (Freeman, 2005). Thus, at present it is necessary to combine both tool and content as a single component in order to provide effective services to the patrons.

As Freeman (2005) indicates, "rather than threatening the traditional concept of the library, the integration of new information technology has actually become the catalyst that transforms the library into a more vital and critical intellectual center of life at colleges and universities today." Howard Cohen (2008), the Chancellor of Purdue University Calumet, asserted: a) the technologies associated with access to information are driving a convergence of both library and computer service organizational function; b) the library must rely more on electronic resources as libraries generally undergo a transition from ownership of information to providing access to information; and c) a merged organization can make better use of resources, avoiding duplication, and concentrating more on direct services. Furthermore, more university administrators have observed that "more reading materials are being digitized, more students are doing research online, more library books are sitting unused, and more patrons are requesting computer and web support" (Foster, 2008).

Third, human capital needs to be utilized more effectively between IT and library. The interdependence between IT and library is an inevitable trend because library needs IT support to deliver information in the virtual world and IT needs the library to enrich their information services on campus. The urgent issue is that library services are incapable of catching up to the unprecedented development of new technology. Once iPod, iPhone, Facebook, Twitter, and other endless new social and learning tools become mainstream for the young generation, the challenges and crises that libraries have faced are critical and immediate. In preparation for the foreseeable issues, it is crucial to take preemptive actions in balancing staff members through the merger.

Needless to say, traditionally the library received more faculty support than the computer center (Riggs, 2000, p. vii), but IT usually needs more human capital than the library. "The primary difference between library and computer center approaches to serving their constituencies," according to Setze and Jordan (2000), "is that libraries have always had a service focus whereas computer centers have had a technology focus" (p. 57). Moreover, "unlike librarians, most academic computing professionals do not have professional identities, though they may have masters and doctoral degrees" (Setze & Jordan, 2000, p. 55).

Since librarians do not necessarily have adequate knowledge about the electronic equipment and services, and the additional training is not always available, IT staff support becomes critical. Also, "unlike librarians, who must obtain an MLS degree, there is no specific advanced degree for academic computing professionals….even with an advanced degree, they are generally not considered for faculty status unless they have a joint appointment with an academic department" (Setze & Jordan, 2000, p. 56). Therefore, the respective talents of librarians and technology should be developed and perceived as diversified and mutually supplementary human capital instead of mutually exclusive competitors. In the end, their combined knowledge and talents would become a valuable asset to the university, as "librarians and computer professionals now realize they are interdependent" (Dougherty & McClure, 1997, p. 78).

The possible merger between library and IT is one of the effective responses to the dramatic development of information technology in general and to the lack of collaborative working relations between librarians and IT staff in particular. To meet the challenges posed by daily changing technology in the age of information science, proactive actions are better than passive responses.

III. Obstacles and Challenges of the Merger

While recognizing the necessity of the merger of both library and IT, it is essential to identify and understand the obstacles of planning and implementing the organizational and infrastructure integration. In particular, the previous experiences could provide valuable lessons on how to deal with the negative factors of the merger.

The lack of consensus on the mission, vision, direction, and purposes of the merger between the library and IT unit is the first challenge. As Peak (2008) indicates, the merger requires "strategies for structural, functional and cultural-level change similar to those for other organizational types" (abstract). In reality, the key driving force for the merger is neither from librarians nor from IT staff, but from the university senior executives and board of trustees, because they initially would like to save money and/or solve a particular personnel or organizational problem. Additionally, key administrators interpreted the merger as one way of getting "access to the library's space and budget to support the university's IT infrastructure, which most institutions are struggling to fund adequately" (Stahl, 2008, p. A39). This kind of intention and motivation are understandable and may be necessary to initiate the merging process in order to get support from the senior leadership team.

However, these practical and expedient approaches may be the key reasons for the failures of many mergers because their main purposes focused on financial or personnel considerations instead of user needs (Seiden & Kathman, 2000, p. 11). The motivation of saving money or reducing staffing for the merger "almost always lead to a download spiral in service quality and staff morale" which will "present significant obstacles to success" (Ferguson, Spencer, & Metz, 2004, p. 39). Outcomes of the merger, according to many college officials, have indicated that "those hoping to save money with these mergers will be disappointed" because "salary and technology costs can rise" (Foster, 2008). As Stahl argues, "to reconstruct a library that has been forced into an IT model takes more money and effort than it does to reconstruct an IT operation that has been mismanaged" (Stahl, 2008, p. A39). The outcome of the merger does not save the cost at all because "many merged organization can end up spending more money." For example, Learning Commons at Xavier University "is costing so much—part of a $110-million campus project—that the university is appealing to alumni for donations to construct the building" (Foster, 2008). In addition, "payroll costs can also go up. The skills of information-technology experts are in greater demand outside academe, so they tend to earn more than librarians. Merging the two staffs…. sometimes drives librarians' salaries up so they are on par" (Foster, 2008). Furthermore, dealing with personnel issue can also be ineffective through merger. At Gettysburg College, "the merger lasted three years. During that time six of nine librarians left. All the technology workers stayed…Each unit has its own budget and leader" (Foster, 2008). Given the confrontations between librarians and tech staff, the merger should "use a light

touch…This means not going in and insisting on personnel changes, not suddenly moving people around into different physical locations and forcing combinations where they don't feel natural" (Foster, 2008).

The second obstacle is the lack of responsible and reliable leadership. As a seeming consensus, the critical impetus for the merger is from senior administrators instead of the IT or library director (Seiden & Kathman, 2000, p. 10), and "organizations of any kind flourish or falter based on their leadership" (Oden, Temple, Cottrell, Griggs, Turney, & Wojcik, 2001, p. 18). Addressed by Peak (2007), "technologically driven change needs visionary and dynamic leadership on multiple levels: technological, motivational, innovative, politically astute and revenue generating" (p. 307).

According to Meachen's (2000) study on 11 campuses of the University of Wisconsin that have a Chief Information Officer (CIO), the decision making on all the mergers were from top to bottom (p. 91). Obviously, "the transition can be bumpy. Most often, library and technology personnel end up reporting to the CIO, and sometimes the position of chief librarian is eliminated. The loss of autonomy can rankle the library staff" (Foster, 2008).

Therefore, accurate judgment and effective decisions by the leadership will be critical to the outcome of the mergers. The key differences between senior leaders (CEO or CIO) and departmental leaders, library director and IT director are that the later three often would like to build up the distinct boundaries between their respective units while the former prefer to break the boundaries and integrate the different organizations. The merger is an important effort to establish the integration of different units and provide smooth cooperation of different services. Several interviews have demonstrated concerns about the negative results of the merger. One librarian mentioned that "the library suffered initially because the director was pulled away from library issues and forced to deal with many IT issues….There is a suspicion that we do not pay enough attention to books." Other complains from IT also argued that IT had lost focus when the merged unit was created (Stemmer, 2007, p. 94). Therefore, while the top-down strategy is necessary, the motivation from the bottom up is also critical. Particularly, both librarians and IT staff need to build up good working relationships based upon their mutual understanding that they are partners helping each other, instead of competitors playing a zero-sum game.

The lack of collaboration between librarians and IT staff is another downbeat factor discouraging a successful integration. Given that "staff performance ultimately determines service quality," it is vital to assign the right staff to the right positions at the right time during the merging period (Oden, Temple, Cottrell, Griggs, Turney, & Wojcik, 2001, p. 20). A wrong position created at the wrong time will certainly cause wrong results. Xavier University, for instance, had a highly negative experience in that it had hired four chief information officers in five years; its technology was obsolete; its library and IT staff did not talk to each other, and students had to jump through hoops to do online research" (Foster, 2008). As one CIO indicates, "integrating services is going to require that some staff development time be devoted to helping staff appreciate the model" (Stemmer, 2007, p. 93).

Various unsuccessful mergers demonstrate that librarians and technology experts are not willing to work side by side "responding to students' needs for immediate, round-the-clock access to electronic data and interactive Web applications" (Foster, 2008). According to Dougherty (1987), due to professional jealousy, both units are fighting about who should dominate the campus environment (p. 291). This non-cooperative culture should be addressed at the strategic level, reflected by a university strategic plan, which "is an effective means of bringing about the technical, political, and cultural changes needed to effect strategic improvements in information services." Therefore, all library and IT staff should get involved in designing and discussing the strategic plan in the first place (Hughes, 1989).

In AckerBy and Miller's (2004) view, "IT is concerned about becoming a commodity and librarians wonder if their current resources and services are becoming irrelevant". As a result, both IT and the library, and the university at large, are the losers if "IT and libraries oppose one another in budget deliberations and infrastructure advocacy" (AckerBy & Miller, 2004). After all, historically, "IT people and library people have not been inclined to come to the concept of service with the same view" (Heid, 2007, p. 1).

Therefore, in an effort to limit or eliminate the aforementioned obstacles of the merger, university leadership needs to realize the strategic urgency of the integrated organizational infrastructure between library and

IT. Meanwhile, all librarians and IT staff should have a mutual understanding that they are in the same boat and must cooperate with each other in order to overcome the unpredictable and unprecedented "white water." In particular, the middle level management of library and IT departments must play a significant role in providing a bridge between senior administration and staff members to ensure effective operational functions during and after the merger. After all, "collaboration is, without doubt, the keyword that summarizes recent trends in libraries and information technology, especially in the world of academe" (Rentfrow, 2007, p. 8).

IV. Reflections of Successful Mergers

Generally speaking, the merger between any organizations may produce three types of outcomes. The first one amounts to the "physical effect" in that the combination of two organizations simply changes their form, but not the substance (to paraphrase a Chinese saying, it replaces the old bottle without altering the wine). To put it in mathematical terms, the result of adding one organization to another in that 1+1 in this case leads to just another 1 (if not less than 1). The second is the "chemical effect" in that the integration of two organizations leads to some functional and structural changes. This case could mean that 1+1 equals 2, which is better but not enough. The third and most ideal outcome is the generation of a "biological effect," that is, the new product of the merger is one of mutually indispensable interdependence, and creates the virtual effect of 1+1 larger than 2. Most of the unpleasant and failed mergers are attributable to the "physical effect", which lacks substantial integration and functional improvement.

Obviously, no one model of merger can be applicable to a variety of different situations. For instance, the proposed merger is not necessarily appropriate at larger institutions and research universities because "the bigger the university, the more complex its structure and the more it relies on specialists. They are not used to working across boundaries and have more clout to resist change. The mergers work best at small colleges…" (Foster, 2008). Based upon Bolin's study, 88% of land grant universities are still using the traditional model that the library director reports directly to the provost and the IT director reports separately to the provost or to another administrator (Bolin, 2005, p. 7). However, learning most of the successful and unsuccessful cases of the merger may demonstrate various meaningful principles and approaches as a useful reference.

The first principle is to create a position of Chief Information Officer who should be responsible for supervising library and IT operations, and who is also instrumental in aligning library and IT (Mech, 2000, p. 27). However, regarding the CIO position, there are several options for stipulating its responsibilities and qualifications. One option is to hire a CIO who has a Ph.D. degree and who is given a faculty position; he/she can serve as the director for both the library and the IT department, but directly reports to the chief academic officer or the vice provost. For instance, the library director at the University of Tulsa reports to its vice provost for Computing and Information Services (Bolin, 2005, p. 3). Selecting a CIO who is also a faculty member will make other faculty members feel comfortable because he/she will be seen "as a colleague who may have earned a similar degree, served on faculty committees." Also, it may make a difference in communication styles because it will give faculty members advantages of "asking questions and eliciting responses from librarians as compared to similar exchanges with some IT staff members" (Pakala, 2008, p. A35). This option will keep the library within academic affairs.

The other option is choosing a CIO who supervises both the library and IT but directly reports to the Chief Executive Officer (the President or Chancellor); he/she could be given an additional title such as the Vice President for Information Technology. For instance, the dean of libraries at the University of Nevada-Reno is also the vice president for information technology reporting to the President (Bolin, 2005, p. 4). Following this model, the library will no longer be a part of academic affairs and, as a result, it will significantly change the traditional relationship between the library and academic affairs because librarians in many universities are tenure-track or tenured faculty who adhere to review procedures for tenure and promotion supervised by academic affairs. Additionally, librarians will be unlikely to benefit from academic affairs resources, such as various internal grant and award opportunities designed to support full-time faculty's research and teaching activities. This model may also address the concern that IT may take over the library in the future. Therefore, the CIO's different reporting channels to either chief academic officer (provost) or chief executive officer (president) will affect the operation of library and IT significantly.

The second principle is to provide a one-stop service integrating library and IT services in one location. In doing so, universities are in need of "building positive relationships among group members, and enabling the group to be effective at problem solving" (Goodyear, Russell, & Ames-Oliver, 2006, p. 8). At Xavier, "Discovery" is a working group that provides all public information needs, including circulation, classroom support, reference, and technical help, and is very effective because it is able to help students with running computers, answering their reference questions, and checking out materials. This unit also offers professional assistance to faculty members with software or hardware for classes, such as Blackboard Course Management System. Meanwhile, it keeps the conventional library function through a software program called Content Management System, designed to create , edit and manage digital media and text in taking care of "collection development, cataloging, and assembling of digital data" (Freeman, 2008).

Similarly, more universities have created and implemented a comprehensive institutional learning commons. Located in the library, it is "a dynamic, collaborative environment on campus" providing both IT services and research information. In an effort to make student learning easier and service more friendly and efficient, learning commons combine "individual and group study space, in-depth reference service, and instruction from a variety of sources, including librarians and information technology staff" (York University, 2008). With respect to the professional partners, learning commons usually develop "effective collaborations with library, IT, writing center, student associations, advising service, ESL groups, and diversity services" (York University, 2008). Also, "users will be able to get technical help, use multimedia software at any one of a bank of computers, view the library's online holdings" (Freeman, 2008). As a result, "Learning Commons are increasingly popular because they integrate services traditionally found in many locations around campus" and "they facilitate a high level of collaboration among their partners" (York University, 2008). That is a typical model of the so-called "chemical" or "biological" effects of organizational merger.

Mount Holyoke College, for instance, is one of the first undergraduate institutions to have merged its library and computing services. It developed a unique organization combining library, information, and technology services (LITS) together, and facilitating the programs provided by library, computing, foreign language, and media resources, and electronic services (Mount Holyoke College, 2004). At Mount Holyoke College, it also divides its LITS into three key areas: a) library research and collections providing conventional library service; b) technology resources offering IT services; c) teaching & learning for both faculty and students (Mount Holyoke College, 2004). Similarly, at Xavier, "students who want to use laptops in the library are no longer sent across the campus first to have their machines reconfigured. A technician in the library, part of the Discovery team, adjusts the laptops' settings so students can immediately gain access to the wireless network" (Foster, 2008). It is interesting to note that traditionally, "IT supports technology and libraries provide content. But, RefWorks, a bibliographic citation management service, fits neither side of the house" (Farrelly, 2006). More learning spaces have been developed physically and academically.

The third principle is to create joint appointments for both librarians and IT staff members. At Xavier University, for instance, "librarians and technology workers were told they must collaborate and have been retrained to facilitate the process. Thirteen librarians have been split into two groups, each including technology employees" (Foster, 2008). While group one is dealing with library public services and computer services, the group two is responsible for all library technical services, collection development, and digital data processing. The two projects integrated with the two groups have significantly improved the quality of library and IT services. At Pacific Lutheran, "its technology staff had been infused with the librarians' culture of catering to clients, and that librarians were influenced by technology workers' ability to keep current with technology trends" (Foster, 2008). Similarly, at Brandeis University, "librarians and technology professionals recently cooperated to install a new course-management system…before the merger, people were tripping over each other" (Foster, 2008).

Additionally, "the creation of a set of permanent advisory committees with balanced representation from the faculty and student body," according to Setze and Jordan (2000), "is critically important" because they are capable of providing effective communication and collaboration." The college librarian, in Setze and Jordan's view, "should be at least an ex officio member of the committee advising academic computing, and the head of academic computing (or the head of the entire computing organization) should be at least an ex officio member of the committee advising the library." Such a committee assignment cross representation "would reduce the chances for misperception and increase the chances for constructive dialogue" (p. 59).

As a result of the proposed new assignment, "the focus of librarians will be more on teaching students to navigate and evaluate information, and on assisting faculty in using resources effectively in curriculum, rather than on collection building" (Lewis & Miller, 2000, p. 204). Therefore, following the dual roles of the library, serving print collections in the past and information technologies at the present, the new model of the library "must be viewed with a new perspective and understanding" to add new value "to the advancement of the institution's academic mission" and to move with that institution into the future." Freeman believes that "rather than threatening the traditional concept of the library, the integration of new information technology has actually become the catalyst that transforms the library into a more vital and critical intellectual center of life at colleges and universities today" (Freeman, 2005).

In conclusion, in order to mold the library and IT into dynamic and sustainable learning and teaching resources in higher education, it is imperative to integrate their organizational units with a design to optimize their programs and personnel in improving their quality of services. Although there is no singular model that every academic library should, could and would follow, the bottom line is that, in light of interdependence between librarians and IT staff members, they must cooperate and "talk together frequently, meet, share information, socialize some and work shoulder-to-shoulder on joint taskforces and other projects" (Cain, 2003, p. 181). In accordance with the principle of the "golden means," the balance between centralized planning and decentralized operation, the balance between centralized resource allocation and decentralized resource management, and the balance between motivating librarians and incentivizing IT staff may optimize the effectiveness of the merger. After more than 30 years of debates and practices in terms of the merger between library and IT, it is time to focus on and highlight some major consensuses about the purposes, principles and outcomes of such an undertaking. A conclusive discussion is necessary to provide the right direction and effective assessment of the ongoing mergers.

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