FEATURE: REPORTS FROM THE FIELD

Embedded Librarians as Providers of Knowledge Services

Anna Pospelova, Rimma Tsurtsumia, and Margarita Tsibulnikova

abstract: This article considers the evolution of the professional librarian from a collection-centered liaison librarian to a service-oriented, embedded specialist. It analyzes the competencies required to provide embedded library services and describes a process for establishing an embedded librarian model in a university library in an “Expert Librarian” project. Examples of services and products that libraries could provide are suggested. The article also discusses the possible transformation of embedded librarians into providers of a service known as knowledge process outsourcing.

Introduction

Higher education systems are changing, with leading international universities constantly seeking to improve their performance indicators and score higher on ratings scales. This race to the top directly affects the academic community. As part of their tenure at a university, scientists and lecturers must regularly prove the effectiveness of their scientific activities by publishing in high-ranking journals, obtaining prestigious grants, and concluding beneficial contracts, preferably with foreign partners. They must do these things while fulfilling their educational duties of lecturing, preparing training courses, and supervising the scientific work of students. Scientists are also often required to perform administrative functions, such as keeping financial statements and resolving organizational issues.

A scientific library is one of the most important places for students and academic staff. However, by itself, a library is simply a repository of information. The work of librarians ensures that a library successfully carries out its missions to provide users with access to quality information resources to support their educational, scientific, and professional activities; promote the cultural education of the university staff; and serve as a center of culture, science, and new technologies.

Establishing embedded librarian service and transferring some research functions to libraries can give researchers more time for their research activities.

As university libraries provide information support for the scientific and educational processes at universities, they have the potential to become embedded in the university’s scholarly communities. Establishing embedded librarian service and transferring some research functions to libraries can give researchers more time for their research activities. However, before making these arrangements, some questions need to be resolved:

1. What are the competencies required in librarians to provide embedded library services?
2. What kind of embedded library services can libraries offer to scientific organizations?
3. What benefits will scientific organizations gain from such embedded librarian services?
4. What is the future development of embedded library projects?

Since the 1990s, many companies have adopted a practice called business process outsourcing, contracting out such activities as customer relations or payroll to a third party to save costs. A subset of business process outsourcing known as knowledge process outsourcing involves knowledge- or information-related activities, such as research and data management. This article proposes that embedded librarians have the potential to become providers of knowledge process outsourcing for their institutions.

The objectives driving this study are as follows:

1. to describe the process of transformation of librarian specialists into embedded librarians and give a general description of an embedded librarian’s characteristics;
2. to illuminate embedded library services in different libraries through examples;
3. to present the development of an embedded librarian service though an “Expert Librarian” project and to give a SWOT (strengths, weaknesses, opportunities, and threats) analysis of the project.
4. to suppose future development of embedded librarians as providers of knowledge process outsourcing.

In the twenty-first century, the value of a library depends less on the content of its collections and more on the quality of the services it offers. A library can only provide in-demand services if it has highly qualified, mobile specialists willing to work in a dynamic, changing environment.

**Literature Review**

The role of librarians is changing. Libraries, traditionally focused on the products of scholarship, are now prompted to understand and support the processes of scholarship. New kinds of relationships are needed to respond to the changing work of faculty and researchers and to adapt to constantly evolving learning outcomes, research processes, and communication practices.

Jennifer Church-Duran provides an exploration of libraries that recently redefined or restructured their liaison roles. Traditionally, liaison librarians are assigned to a specific client base (a school, department, college, research center, or cocurricular unit) in a personalized, relationship-centered system of service delivery. These specialists provide
communication channels between the library and a community of scholars. The evolution of liaison librarianship has distinctive trends: a transformation from a collection-centered to a service-centered approach; engagement in scholarly communication; supporting faculty needs and bridging gaps in knowledge; and repositioning librarians as partners and collaborators.4

Liaison librarians directly collaborate in the creation of new methodologies in the field, such as systematic reviews of current literature.5 They must be knowledgeable, confident, proactive, and politically savvy. Liaison librarians offer a campus more than support; they are partners and leaders, helping faculty and students navigate a rapidly changing landscape. A liaison librarian’s willingness to leverage teachable moments wherever and whenever they may occur (at physically embedded service points) may go a long way toward satisfying users’ teaching and learning needs. Embedded librarianship is not a panacea, but it is a way to build sustainable collaboration with a scholarly community.6

Embedding implies the complex integration of one group with another to study and analyze processes and so better understand the target group’s needs. In other words, embedding requires a direct and active interaction with the target group to establish sustainable collaboration. Embedding refers to the deep involvement of the library in the research, social, and cultural life of a university. An embedded librarian needs to understand the priority research needs at the university, interact with departmental representatives, and have enough knowledge to serve as a cocreator in the research and learning process. An embedded librarian is a member of the user community rather than a separate service provider. Librarian-customer relations are built on the principle of “what we can do for each other.” Active participation in the communication process can allow librarians to establish strong collaborations with users.7

The University of Michigan Library in Ann Arbor became involved in the university’s MCubed funding program, which funds faculty-led teams to spark innovative research. Librarians participated in three different MCubed projects. Their roles ranged from mentoring and project management to literature searching. As a result, more researchers recognized the value of library participation. This experience demonstrated that librarians can function as primary collaborators instead of support personnel.8

Embedded librarians must take risks as they move into this different collaborative role. A user-oriented approach, teamwork, and relationships based on trust between the librarian and user may help to overcome many difficulties. Embedded librarians also need to have a more commercial outlook to promote new services and products.9 They must exercise initiative and organize new ventures to take advantage of opportunities—in other words, they must become entrepreneurs. Steven J. Bell developed a list of seven tips for librarians to develop entrepreneurial competences:

---

Liaison librarians offer a campus more than support; they are partners and leaders, helping faculty and students navigate a rapidly changing landscape.
1. Listen and observe to pick up the right signals;
2. Accept hard work;
3. Break a few rules;
4. Balance risk and evolution;
5. Develop “sticky ideas” that can be explained in a compelling, convincing way;
6. Use the “zoom-out lens” to stay focused on long-range goals rather than on the immediate crisis; and
7. Be a problem finder.

These abilities are needed for embedded librarians to move toward outsourcing.12

Each library has its own way to develop embedded library services. The research-embedded health librarian at the Indiana Hand to Shoulder Center, an orthopedic treatment facility in Indianapolis, increased awareness of and access to in-house and electronic resources. The librarian helped transition from print collections to online access and resources, identified grant opportunities and assisted in the writing of grants, discontinued certain traditional and costly activities (such as bookbinding and journal check-in), and created an environment for reflection and writing away from patient-related areas, among other innovations.13

Embedded librarians have also successfully moved into the online environment. At Everglades University in Boca Raton, Florida, librarians assisted students in a project within the university’s eCollege course management system. Amanda Bezet observes:

A move from macro-level embedded involvement, in which a library tab was centrally placed on the course management system’s home page, to micro-level involvement, such as uploading subject-specific resources into individual classes, has certainly served to enhance the university’s course management system.14

The online instruction librarian at King University in Bristol, Tennessee, created a manual that defined the goals and structure of the online embedded librarian program. The university library implemented the program in two research-intensive courses, NURS 3310: Foundations of Nursing and NURS3320: Research Methods. The key features of the manual related to curriculum mapping, the systematic design of a course of study to achieve the desired student learning outcomes. The mapping involved the selection of skills needed to teach certain courses, the development of tutorials to incorporate learning objectives, and the provision of assistance and guidance by creating customized products such as video tutorials, research discussion forums, and real-time online workshops.15

In the fall of 2013, the Nazarbayev University Library in Astana, Kazakhstan, began its pilot embedded librarian project in several undergraduate mathematics courses. The embedded librarian collaborated with a mathematics professor in the School of Science and Technology on such activities as conducting library in-class sessions and individual tutorials, providing embedded support via Moodle’s virtual learning environment, and evaluating reference list sources. The project led to an improvement in the students’ information literacy and academic performances.16

Embedded librarians have played an important role in educational and research activities, online course design, and library-departmental collaborations. Abdullah Abrizah, Samaila Inuwa, and Nur Afiqah-Izzati say, “Embedding roles bring academic librarians
out of centralised libraries and puts them into the academic spaces in which they can provide individual support and resources either through paper or electronic formats.”17

The “Expert Librarian” Project at Tomsk Polytechnic

Tomsk Polytechnic University (TPU), the first engineering university in Russia’s Siberia and the Far East, was founded in 1896 as Tomsk Technological Institute of Practical Engineers and was opened in 1900 by the Russian Emperor Nicholas II. Today, TPU is one of the top 10 Russian universities and one of the 400 leading universities in the world. As of 2017, the university had 10 research and engineering schools, 13,500 students, and 1,500 academic faculty and staff.18

The Obruchev Scientific and Technical Library (STL), a structural subdivision of TPU, was the first technical university library in Siberia and is one of the largest university libraries in Russia. The library building covers 7,500 square meters (about 80,730 square feet). It opened at the beginning of classes in October 1900. More than 16,000 students, lecturers, university employees, and users from other universities and organizations take advantage of the library’s services. The library collection holds more than 2.5 million printed books on technical, natural, humanitarian, and social and economic sciences. Users also have access to more than 50 licensed Russian and foreign databases, which are available at all times from off campus. The library services include computers and free Wi-Fi.19

In the fall of 2015, the STL began the “Expert Librarian” project, the aim of which was to provide complex information support based on worldwide print and electronic resources for research groups, departments, university staff, and PhD students. The project coordinator was the head of one of the library’s structural subdivisions, which initiated the project. The coordinator’s responsibilities were as follows:

1. Supervise the work of the expert librarians;
2. Organize and encourage interactions between the expert librarians and STL and TPU departmental staff and employees;
3. Collect quarterly information about requests for library service;
4. Consolidate the information into a single table, and analyze and prepare reports for the library director;
5. Search for possible collaborations with the various university departments and services.

The library director and the coordinator developed the following criteria for the selection of expert librarians:

- Skills in bibliographic work (ability to handle vast information, experience in the qualitative selection of documents, and the like);
- Highly qualified information search skills;
- Advanced search intuition;
- Critical thinking;
- Willingness to learn new forms and methods of interaction;
- Mobility (ability to work in new conditions);
- Readiness to combine the expert librarian functions with current library work.
Figure 1 shows the main differences between the embedded expert librarians and the subject librarians.

The duties and responsibilities of the embedded expert librarians and the expected interactions with their assigned research institutes were outlined by the library director and project coordinator as follows:

1. Establish contact with the scientific department of the institute or the institute representative responsible for the scientific work and provide personal contact information along with a list of library services;
2. Become familiar with the structure of the institute, the areas of research, and the educational activities;
3. Monitor and identify the professional information support needs of the academic staff and PhD students;
4. Send information about personal library support services to the structural units of the institute;
5. Participate (on preliminary agreement) in institute meetings to give information about the library services and resources and maintain contact with researchers by e-mail, telephone, or social networks;
6. Organize individual and group consultations and training activities on library information resources;
7. Regularly inform the institute about forthcoming events in the library (such as training sessions, workshops, and meetings);

<table>
<thead>
<tr>
<th>Subject librarian</th>
<th>Embedded expert librarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interdisciplinary within the scientific fields.</td>
<td>Works with interdisciplinary subjects.</td>
</tr>
<tr>
<td>Works within a particular scientific field (biology, anthropology, solid state physics, etc.)</td>
<td>Works within the direction of the institute (one scientific field may include several areas of knowledge.) For example, nondestructive testing includes nanoelectronics, biotechnical systems, ecology, and technology.</td>
</tr>
<tr>
<td>Fulfills requests from all university employees and students within a certain scientific field.</td>
<td>Fulfills requests from employees and students at the supervised institute.</td>
</tr>
<tr>
<td>Fulfills basic librarian functions.</td>
<td>Embedded in the scientific process of the assigned institute.</td>
</tr>
<tr>
<td>Responds to requests.</td>
<td>Proactive, searches for collaborative partners.</td>
</tr>
<tr>
<td>Stable.</td>
<td>Mobile.</td>
</tr>
</tbody>
</table>
8. Respond to user requests for information by initiating searches on the requested research topics in the library collections, accessible databases, and through the Internet;
9. Consult on publication activities and work with global citation indexes (such as Scopus and Web of Science) and other e-resources (including ORCID, ResearcherID, and Mendeley);
10. Perform reference editing services;
11. Develop new work forms and methods;
12. Organize literature exhibitions based on the scientific and educational activities of the institute;
13. Help organize interactions between departmental and library staff; and
14. Collect and file request information and prepare a regular report for the project coordinator.

The expert librarians not only supported their institutes but also continued their general librarian duties, such as providing services to library users in the reading rooms and consulting on and conducting lectures. While having these ordinary librarian responsibilities reduced the time available for expert librarians to become deeply involved in the institutes, their multi-functionality meant that they gained new knowledge and skills in the embedded library services role. Because they collaborated with other library divisions (interlibrary loan, department of information technologies, and the like), they could easily and quickly fulfill difficult requests.

A unified request form (expert librarian’s diary) was developed. Each expert librarian kept this diary in Excel format to record information about requests (date, customer contact, time, result, and similar information). Table 1 shows an example from an expert librarian’s diary.

The representatives of each institute were invited to a project presentation at the library, shown in Figure 2. To increase the library’s involvement in daily campus activities, the university encouraged active library participation at university events. The presence of the library in the “campus, department, classroom, and kitchen” enabled it to build partnerships with its users, thereby increasing the visibility and accessibility of the library services.20 The physical presence of the librarian in a department allowed the library to extend its sphere of influence, become integrated with the department’s culture, develop joint courses, and participate in grants.21

The director of the Arizona Health Sciences Library in Tucson persuaded the deans of several medical colleges to provide a separate space for librarians in each of their buildings with the belief that this closer proximity would provide better services for the primary users. The medical college faculty began to view the librarians as team members and invited them to participate in research.22

At Tomsk Polytechnic, the library website developed a section focused on the “Expert Librarian” that included information about the embedded expert librarians (with photographs and contact information) and their respective institutes as well as a list of the provided services. The website was designed to help employees at the institute become familiar with their institute’s personal librarian. At the interpersonal level, each expert librarian conducted a detailed study of the main areas of research at his or her institute to provide it with relevant up-to-date information.
**Table 1.**
Example of an expert librarian’s diary

<table>
<thead>
<tr>
<th>Type of service: Journal and conference search</th>
<th>Date</th>
<th>Title</th>
<th>Customer full name and post</th>
<th>Department, laboratory, etc.</th>
<th>Results</th>
<th>Information sources</th>
<th>Time (hours)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25.01.16</td>
<td>Article title: “Analysing deformation and fracture of . . .”</td>
<td>Ivanov I., associate professor</td>
<td>Department of Industrial ...</td>
<td>Found eight journals and five conferences.</td>
<td>Scopus, Web of Science, Journal Citation Reports journals with IF&gt;1</td>
<td>3</td>
<td>Ask to search</td>
</tr>
</tbody>
</table>

This mss. is peer reviewed, copy edited, and accepted for publication, portal 18.4.
The expert librarians received service requests by e-mail and phone, each of which varied in level of difficulty and the time needed. Every quarter, the project coordinator collated the information about requests in a summary table using Google Forms, which gave information about the institutes, the types of services, and the number of requests. The summary helped identify the most popular library services.

The most demanded services were consultations (individual and group), subject searches, and journal and conference searches. A special subject search form was developed, in which the user supplied information about the focus topic, possible keywords, coverage years, possible information sources, and contact details. The expert librarians extracted the requested information and then sent a source list with abstracts of the articles by e-mail to the user. The user could then complete a further request for the full texts.

The expert librarians often deal with interdisciplinary projects. For example, the

---

The most demanded services were consultations (individual and group), subject searches, and journal and conference searches.

---

<table>
<thead>
<tr>
<th>Meeting of the institutional representatives with expert librarians</th>
<th>Presentation of the project at the institute</th>
<th>Informing institution staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>❖ Presentation of the project at the library.</td>
<td>❖ Librarians visited the scientific meetings of the institutes.</td>
<td>Project information was posted on the university and library websites as well as on the respective institute pages.</td>
</tr>
<tr>
<td>✓ Purpose and objectives of the project.</td>
<td>❖ The project was presented to the directors of the institutes, the heads of the departments and laboratories and staff.</td>
<td></td>
</tr>
<tr>
<td>✓ Target audience.</td>
<td>❖ Brochures with project information were handed out.</td>
<td></td>
</tr>
<tr>
<td>✓ Services.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Advantages.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>❖ Introducing expert librarians to the institutional representatives.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>❖ Exchange contacts.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Institute of Non-Destructive Testing works in the field of nanoelectronics, biotechnical systems, ecology, and technology. Embedding allows close collaboration and the solving of emerging questions. Being embedded is crucial for these types of activities because it gives the opportunity to “become immersed in the culture and spaces of users” and “understand the discipline including the culture and research habits” of users. The expert librarians have an essential resource base and the access to different interdisciplinary and special content. Sometimes, the scientists themselves do not know about available information sources. Therefore, this type of service saves scientists the time needed to conduct these global searches.

Expert librarians also inform their respective institutes about events, workshops, and webinars from leading information providers, such as Elsevier, EBSCO, and Springer. In 2016, each expert librarian conducted several workshops outside the library on topics previously agreed on with the scientific divisions at their respective institutes. In the Robotics and Oil Well Drilling courses, for example, the librarians delivered lectures on patent databases.

Collaboration and informal communications with the university, departments can lead to joint projects. The librarians at New York University Shanghai in China collaborated with the manager of the Career Development Center at the university. Librarians embedded in the center organized a workshop and taught students how to conduct career research using business databases. The library also partnered with the Academic Resource Center and launched the first “International Game Day @ Your Library” event. The librarians designed the script for the game, which taught users how to conduct scientific research using databases.

In September 2017, Tomsk Polytechnic University held the first Research Communication School, “Effective Scientific Activities: How to Become a Successful Scientist.” The aim of the school was to develop scientific communication ability, presentation skills, and fluency writing in English for publication in high-ranking international journals. Among the invited lecturers were expert librarians, who delivered lectures on publication ethics and working with reference manager software.

One of the competition events was an online contest on e-resources called “Guess E-Base.” Expert librarians designed the competition format; prepared questions covering all aspects of scientific activity, such as knowledge of e-databases, publication activities, and scientometric indicators; and then summarized the results. Table 2 provides examples of questions from the contest.

The benefits for the research community of having embedded library services include:

- use of skills and experience of highly qualified specialists in the field of information and knowledge processing;
- information support based on modern e-resources and search engines;
- enabling researchers to save time and concentrate on core research functions; and
- constant support for researchers’ competencies in the fields of publication activity and information literacy (library workshops, webinars, and consultancy services).

The development of the embedded library services at the university has allowed for redistribution of the load between the library and the academic community. The
**Table 2.**
Examples of questions from the online competition “Guess E-Base”

<table>
<thead>
<tr>
<th>Examples of questions</th>
<th>Possible answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What e-database got its name in honour of the hamerkop, which has excellent</td>
<td>a. Scopus*</td>
</tr>
<tr>
<td>navigational abilities?</td>
<td>b. Web of Science</td>
</tr>
<tr>
<td></td>
<td>c. Elsevier</td>
</tr>
<tr>
<td>2. Who doesn’t have an h-index?</td>
<td>a. an uncited scientist</td>
</tr>
<tr>
<td></td>
<td>b. a scientist with a bad reputation</td>
</tr>
<tr>
<td></td>
<td>c. a PhD student</td>
</tr>
<tr>
<td></td>
<td>d. a scientist with one article, who was cited one time</td>
</tr>
<tr>
<td></td>
<td>b. SAGE Journals Online</td>
</tr>
<tr>
<td></td>
<td>c. IEEE (Institute of Electrical and Electronics Engineers) Xplore Digital Library</td>
</tr>
<tr>
<td>4. In what e-database can you draw the formula for a molecule?</td>
<td>a. Royal Society of Chemistry</td>
</tr>
<tr>
<td></td>
<td>b. American Chemical Society</td>
</tr>
<tr>
<td></td>
<td>c. SciFinder</td>
</tr>
<tr>
<td>5. You can submit your article to Elsevier journals using a simplified procedure.</td>
<td>a. Elevator pitch</td>
</tr>
<tr>
<td>What is the name of this procedure?</td>
<td>b. Mendeley Cite-O-Matic</td>
</tr>
<tr>
<td></td>
<td>c. Your Paper, Your Way</td>
</tr>
</tbody>
</table>

*The scientific name of the hamerkop, a wading bird, is Scopus umbretta.*

transition of the defined functions to the embedded librarians saves the academic staff
time on their information searches, while allowing the librarians to actively participate
in the university’s research activities and final products, as well as provide focused
outsourcing services, shown in Figure 3.

A SWOT-analysis of the “Expert Librarian” project identified the advantages and
disadvantages and gave directions for future developments. Table 3 provides a sum-
mary of the analysis.

The development of embedded library services largely depends on the interests
of the user and the availability of sufficiently qualified embedded librarians. First, it is
necessary to evaluate the readiness of both the library and the organization. As David
Shumaker says, “Not every customer group needs this kind of service, and not every
librarian has the skills or the motivation to provide it.”26
Future project development will be directed to an expansion of the user base and the involvement of additional university departments and laboratories. At the end of 2017, the university reorganized into 10 research and engineering schools instead of 7 institutes. In connection with this reorganization, the embedded librarian team was replenished with new members, who are ready to work in the new conditions.

The “Expert Librarian” project is now mainly noncommercial and focused on supporting research activities within the university. The next stage may be to offer outsourcing services to third parties on a commercial basis. This step, however, requires further analysis, including an estimation of the demand for such services from external organizations, the definition of possible users, the conditions for the service provision, and an estimation of the readiness of the librarians to provide such services in terms of their professional development.

The Library as a Provider of Outsourcing Services: Discussion in Tomsk

On June 27–28, 2017, Russian university libraries participated in a strategic session called “Construct a New Library” in Tomsk. The Ministry of Education and Science of the Russian Federation organized this event based on its aim of “Universities as centres of space for the creation of innovations.” More than 200 participants from 26 universities and 8 public libraries from several Russian cities (Moscow, Krasnoyarsk, Surgut, Samara, and Tomsk) attended. The aim of the session was to develop a model for university libraries, including formulating general objectives and priorities and outlining the directions for the transformation.27
Table 3.
SWOT* analysis for the “Expert Librarian” project

<table>
<thead>
<tr>
<th>Origin</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal</td>
<td>• Highly qualified expert librarians.</td>
<td>• Weak personal motivation of the expert librarians.</td>
</tr>
<tr>
<td></td>
<td>• Years of experience and developed search intuition.</td>
<td>• Gaps in the knowledge of foreign languages.</td>
</tr>
<tr>
<td></td>
<td>• Mobility—the ability to switch to work in new areas of knowledge.</td>
<td>• Weak skills in applying marketing technologies and promoting embedded library services.</td>
</tr>
<tr>
<td></td>
<td>• Provides need-based services.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Quick feedback.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ready to work outside the library.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Proactive, search for collaborative opportunities.</td>
<td></td>
</tr>
<tr>
<td>External</td>
<td><strong>Opportunities</strong></td>
<td><strong>Threats</strong></td>
</tr>
<tr>
<td></td>
<td>• Availability of educational information resources (including subscribed e-resources).</td>
<td>• Weak awareness of scientific organizations in terms of embedded library services.</td>
</tr>
<tr>
<td></td>
<td>• Desire of universities to improve performance indicators and position in international rankings.</td>
<td>• Low demand for services from the scientific community</td>
</tr>
<tr>
<td></td>
<td>• Increased load on academic staff.</td>
<td>• Biased attitude toward the library.</td>
</tr>
<tr>
<td></td>
<td>• Demand for specialists in the field of publication activity and scientometrics.</td>
<td>• Mistrust of the level of qualification of expert librarians.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The presence of competitors that provide similar services.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Availability of open information resources for independent work.</td>
</tr>
</tbody>
</table>

*Strengths, weaknesses, opportunities, and threats.
One discussion at the session was called “Libraries as Outsourcing Information Centres,” for which participants had to develop a library model that worked as an outsourcing center, define the basic format and types of activities, and develop a comprehensive list of services. According to Cambridge Dictionary, outsourcing is a situation in which a company employs another organization to do some of its work, rather than using its own employees.28

All librarians deal with knowledge and information flows. Embedded librarians dive deep into the research environment of the departments they serve. They are proactive, mobile, ready to get out of their comfort zone, and willing to become involved in collaborative teamwork. All these characteristics point to the embedded librarian as a provider of knowledge process outsourcing, a form of outsourcing where knowledge- and information-related work is carried out by a different company or subsidiary within the same organization to save costs or resources.29

Knowledge processing is an activity that requires a deep level of domain knowledge, analytical thinking, or both. Capgemini, one of the world’s foremost providers of consulting, technology, and outsourcing services, outlines some of the current offerings in knowledge process outsourcing and corresponding activities such as learning and development, Web content management, and data analysis.30 A library can offer knowledge process outsourcing services in such fields as information gathering, intellectual property research, training and consultancy, publishing, data research and analytics, writing, and content development services.

A library can offer knowledge process outsourcing services in such fields as information gathering, intellectual property research, training and consultancy, publishing, data research and analytics, writing, and content development services.

The goal of embedded librarianship is to establish partnership and collaborative relations with scholars. Outsourcing by its nature is a commercial concept and aimed to save costs. A question remains: Is there a contradiction between commercial nature of outsourcing and collaboration approach of the embedded model?

Jae-Nam Lee and Young-Gul Kim conducted a study that identified partnership quality as critical for the success of information services outsourcing. They found that trust, business understanding, benefit and risk sharing, and commitment had a significant effect on outsourcing success. The activities that resulted in success included strengthening communication to achieve and monitor integrative agreements, sharing information to build a competitive synergy that each organization could not easily attain by itself, and building participants’ confidence so that their partners would not act opportunistically.31 Jae-Nam Lee concluded that a cooperative relationship based on trust, business understanding, benefit and risk sharing, conflict, and commitment is critical to maximizing the strategic, economic, and technological benefits for outsourcing.32

Marianne Kinnula identified factors that make an outsourcing relationship successful. They include trust, communication, commitment, honesty, reliability, and fairness.
Other requirements include a joint, multilevel relationship; a sound management approach; synergy between the businesses involved; support from top management in both companies; and similarities across organizational cultures. These factors are crucial for getting the best out of the collaboration and for avoiding possible difficulties. To be successful, the whole relationship must be based on trust. When the outsourcing goals go beyond the achievement of cost saving and focus instead on exchanging and sharing resources and skills, the relationship between the partners becomes more than a purely commercial transaction.

The outsourcing should be considered as a partnership, and each party must be diligent about its responsibilities. Experienced outsourcing clients and providers know that the best partnerships result from shared expectations, flexibility, collaboration, and mutual accountability.

The major strength of the knowledge process outsourcing approach is not the cost-saving aspect but the value that these services provide. They offer a sustainable competitive advantage in knowledge-intensive industries by providing market and industry research, data and statistical analysis, competitive analysis, and support in legal and administrative processes. Outsourcing can help companies to be more efficient, focus on their key success factors, and work on their unique capabilities.

Librarians traditionally fulfill a range of functions connected with knowledge processing, such as research trends analysis, consultancy on information literacy and database searches, and subject and patent searches. For example, the librarians at Nanjing University of Science and Technology Library in China developed a new type of service, the Embedded Patent Information Service, for which the librarians became consultants for patent searches and the analysis of technology trends.

The Research Library of Tomsk State University had its experience in embedded outsourcing library service. Joint work between the Research Library and the Laboratory for Translational Cellular and Molecular Biomedicine led to the development of a library page on the laboratory website, which had an analysis by the Research Library staff of the literature from the last five years on the basic topics at the laboratory. The librarians also provided support in such areas as developing guides for the electronic resources and presenting educational programs.

Discussion

Functioning as experts, embedded librarians became deeply involved in the research activity of their institutes. They actively collaborated with researchers and felt themselves useful members of the scientific community. Researchers’ feedback included such comments as “Thank you for your work! You are my savior!”; “Thanks, you really helped me out!”, and “Your literature review is like a work of patent service!” Researchers also
noted the quick and relevant answers to their queries.

Sometimes, it was difficult to prepare a quick answer because of limited resources and skills. This work helped to identify the gaps in librarians’ knowledge and skills and plan actions to fill them. Expert librarians became the contact points. Each institute member could ask his or her expert librarian directly. Then, the expert librarian began to solve the problem or redirected the inquiry to a specialized library division.

The essence of outsourcing is that one organization transfers certain functions to another organization or individual, with the outsourcing scope stipulated in a contract. Outsourcing to a library involves a contract between the library and the institution that specifies the terms and conditions as well as the associated costs. Whether scientific organizations are ready to outsource certain functions to the library and the specific conditions for outsourcing services are issues that need to be explored in further research.

For the last 10 years, a new type of librarian specialist, the embedded librarian, has developed within library communities. These librarians offer a maximal user-oriented approach. Embedded librarians are proactive, mobile, ready to leave their comfort zone, and willing to get involved in collaborative teamwork, all of which point to them as providers of knowledge process outsourcing. Using the library as a provider of knowledge process outsourcing, researchers get an opportunity to focus on research rather than doing extensive secondary work, and so save time. Development of embedded library services allows universities to have a competitive advantage over other organizations. Such activities as subject search, patent search, and reference editing services can be outsourced.

The willingness-to-pay concept provides a way to estimate the value of knowledge process outsourcing services by the library. Willingness-to-pay is the highest price an individual is willing to give for some good or service. One of the oldest methods for estimation of willingness to pay is the direct survey. Respondents are asked to define the maximum price they are ready to pay for a product or service. Then, the responses are processed to determine the aggregate willingness to pay. This approach is often used for estimating the value of public goods. In economics, a public good is a product that one individual can consume without reducing its availability to another individual, and from which no one is excluded. For example, public parks and recreation areas and their ecosystem services can be considered public goods. The American Library Association declares, “Libraries are not a simple commodity, but are an essential public good.”

**Conclusion**

The deficit of information in earlier times has been replaced by a surplus. Due to digital technologies, researchers have access to millions of databases and search engines. It can be challenging for scientists to find relevant and reliable information sources. Moreover,
researchers must regularly prove the effectiveness of their scientific activities by publishing in high-ranking journals, obtaining prestigious grants and contracts, and fulfilling their duties as educators. In this context, librarians have evolved from collection-centered subject librarians to proactive service-oriented collaborators. New kinds of embedded relationships are needed to respond to the changing work of faculty and researchers. Embedded librarians can serve as reliable partners for the scientific community. Possible future development of embedded library programs may result in the library serving as a provider of knowledge process outsourcing. It gives researchers the opportunity to focus on their main functions and save time. For libraries, knowledge process outsourcing services are a possible source of income.

Acknowledgments

This project was implemented at Tomsk Polytechnic University within the framework of Tomsk Polytechnic University Competitiveness Enhancement Program Grant, Project Number CEP-RIO-52/2017. The authors would like to thank Enago (www.enago.com) for the English language review.

Anna Pospelova is a librarian at the Obruchev Scientific and Technical Library of Tomsk Polytechnic University in Tomsk, Russia; she may be reached by e-mail at: anna.pospelka@yandex.ru.

Rimma Tsurtsumia is a librarian at the Obruchev Scientific and Technical Library of Tomsk Polytechnic University in Tomsk, Russia; she may be reached by e-mail at: tsurtsumia@tpu.ru.

Margarita Tsibulnikova is an associate professor in the Division for Oil and Gas Engineering of the School of Earth Sciences and Engineering at Tomsk Polytechnic University and in the Department of Environmental Management of the Biological Institute at Tomsk State University in Tomsk, Russia; she may be reached by e-mail at: tsibulnikova@tpu.ru.

Notes


