

From Red to Green: Building and Managing the Scientific Electronic collections for a new Sci-Tech University Library

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Abstract:

Electronic resources have evolved to become one of the most important resources within the library's collection. The growths of these resources and the players involved within this area have provided library users with another alternative to obtain information. When implemented correctly with library assistance (library trainings, reference consultations and so forth), library users can access these electronic resources anywhere in the world with relative ease as long as there is an internet connection. Geographic barriers are no longer an issue and information can be obtained in a just-in-time manner.

This paper describes how KAUST library built its electronic resources and how they grew into what it is today. Issues such as manpower, expertise level, budget, ERM tools, library-vendor relations and library-user communication will also be elaborated in the paper. Despite its drawbacks, KAUST library has managed to overcome most of them and strived to improve certain areas of concern. The paper will also describe the library's ERM future directions and strategic planning.

KAUST University was opened in September 2009 and it started out with its first cohort of 800 graduate students (25% female) taught by 100 faculties. The main areas of study focus on science and engineering divisions consisting mainly of: Mathematics and Computer Science, Physical Sciences and Life Sciences. From a demographic snapshot taken in 2010, 36% of the student body came from Saudi Arabia and the Middle East, 34% from Asia, 21% from Americas, 5% from Europe and 4% from Africa (alZahrani, R. , Branin, J. and Yi , 2012).

The university library, when first started, had about 10 staff. The library is known to have a "state-of-the-art learning and information resource center supporting graduate education and advanced

scientific research” (KAUST, 2010). The library subscribed to major science databases, electronic journals and books. It also offers a myriad of services from document delivery requests, textbook services, reference assistance and library trainings and consultations just to name a few.

Keywords: electronic resources management, ERM, collection development

1 INTRODUCTION

In the last 10 years, the library world has seen a tremendous growth in the amount of electronic resources available for use. As mentioned by Breeding, “the number of electronic journals, citations databases and full-text aggregations held by most libraries has grown rapidly” (Breeding, 2004). This has impacted the acquisition, management and collection development activities and policies of such materials within the libraries. Libraries would have to contend with the ever-changing platforms and issues related to electronic resources. Issues such as acquisitions processes, implementation, renewals and notably license agreement negotiations and budgeting are just some of the complex matters involved in the electronic resources management.

Conger, in her book “Collaborative Electronic Resource Management”, defined electronic resources as “set of electronic products, technological tools, and freely available online resources that contribute to a library’s responsibilities in the delivery of information to its community” (Conger, 2004). Examples of commonly used electronic resources today are electronic journals, electronic books, databases (bibliographic and full-text and images) and websites.

This paper will describe how King Abdullah University of Science and Technology (KAUST) library built its electronic resources and how they grew into what it is presently. It will elaborate the early beginnings when the library embarked on its journey to acquire, implement, maintain and renew its electronic resources. This will include issues such as manpower, budget, ERM tools, library-vendor relations and library-users communication. Despite the setbacks, KAUST library has managed to overcome most of them and strived to improve certain areas of concern.

2 BACKGROUND

King Abdullah University of Science and Technology (KAUST), named after the nation’s leader, were opened in 2009. According to its vision statement, KAUST “will be a globally renowned graduate research university that makes significant contributions to scientific and technological advancement, and will play a crucial role in the development of Saudi Arabia” ([King Abdullah University of Science & Technology, 2013](#)). The mission statement of the university is the advancement of science and technology through bold and collaborative research ([King Abdullah University of Science & Technology, 2013](#)).

When the university was opened in 2009, its first cohort of students of “800 graduate students (25% female) taught by 100 faculty who were organized into three broad science and engineering divisions: Math and Computer Science, Physical Sciences, and Chemical and Life Sciences” ([Zahrani, Branin, & Yu, 2012](#)). In its second year, (December 2010), the student demographics showed that 36% of the student population were coming from Saudi

Arabia and the Middle East, 34% from Asia, 21% from the Americas, 5% from Europe, and 4% from Africa ([King Abdullah University of Science & Technology, 2011-12](#)).

Centrally located and “placed” along the shore of the Red Sea, the University Library was designed to be “open, flexible, and transparent space”; with “a variety of study spaces, from quiet, individual work space to collaborative group areas; good social amenities; a robust IT infrastructure; a small footprint for print collections; and self-services for a 24/7 building” ([Zahrani et al., 2012](#)). It is three stories high and “clad in translucent marble and glass” ([Library, 2010](#)). Apart from that, below are some of the facts and figures about the library:

- 14,000 square meters of space
- 150 public workstations
- Wireless network connectivity
- 400 seats
- Quiet and Group study areas
- PC Lab
- Meeting and presentation room
- Copy center
- Café

([Library, 2010](#))

Apart from that, the library collection holds more than 15,000 printed books, about 160,000 electronic books and close to 29,000 e-journals. At the same time, the library also stores “faculty and researcher works and scientific data, student theses and dissertations, and KAUST historical and business records” via its Digital Archives ([Library, 2010](#)).

The library is staffed by 25 para-professionals and professionals in the library field. Library staff comes from western Saudi Arabia and campus community plus an international mixture of professional staff coming from different parts of the world such as United States, Singapore, Canada, India and Botswana. There are 3 sections within the library namely: Administrative, Technical and IT services and Research. All of these 3 section managers report to a library director. Library staff is encouraged to attend continuous development programs in-house or out-of-kingdom related to their area of expertise. These may be in the form of seminars, business meetings and conferences.

3 LITERATURE REVIEW

Developing and maintaining electronic resources within a library is not a simple and straightforward task. It involves manpower (expertise level), time and monetary issues among others. One such example was the King Fahd University of Petroleum and Minerals (KFUPM) Library, Dhahran, Saudi Arabia. Saleh and Syed Sajjad described that KFUPM library had “planned and successfully implemented a well-designed electronic information resources program and consistently revised it to incorporate new information technologies” ([Saleh & Syed Sajjad, 2000](#)). They added that moving forward, it is essential “for the libraries of the Arabian Gulf region to actively cooperate and work seriously towards forming a regional digital library network for optimally using the electronic information resources” ([Saleh & Syed Sajjad, 2000](#)). They also pointed out that with the limited financial resources available to libraries, libraries need to have an electronic resources program “carefully planned to ensure optimal use of money, time and space” ([Saleh & Syed Sajjad, 2000](#)).

A case study by Chinwe Veronica and Majesty Ignatius revealed that building digital collections in Professor Festus Aghagbo Nwako Digital Library was a struggle as the staff had to grapple with management issues, technology provision and infrastructure, manpower and the provision of the resources ([Chinwe Veronica & Majesty Ignatius, 2011](#)). Some of those issues revealed internal politics, lack of internet access, unreliable service provider, lack of trained staff and electronic resources subscriptions that delayed the their project ([Chinwe Veronica & Majesty Ignatius, 2011](#)).

Blake and Stalberg did an experimental study to document and review their Serials department electronic resources workflow. The goals of their study is to achieve “greater efficiency, clarity, and simplicity into processes across the serials unit and increase training opportunities for department-wide understanding of the serials lifecycle” ([Blake & Stalberg, 2009](#)). According to their study, they did a “shadowing” method to see how the electronic resources process and tasks are conducted. “Shadowing” was used as reviewing their documents and interviewing stakeholders could not reveal much about their processes and tasks ([Blake & Stalberg, 2009](#)). After obtaining sufficient information, they began to map the process workflow in order to fully capture and understand the entire tasks workflow ([Blake & Stalberg, 2009](#)). Their study revealed that there were still inconsistencies in the way certain tasks were done by the library staff such as Metadata and Cataloguing. Another issue was the “Lack of clarity regarding departmental responsibilities” ([Blake & Stalberg, 2009](#)). On top of that, the study revealed that the handing over process between internal sections of the library was not clearly established ([Blake & Stalberg, 2009](#)). These were the main issues that needed attention to improve the workflow of the electronic resources.

Kovacs, on the other hand, recommended several steps to guide librarians who are starting electronic collections namely:

- Determine purpose
- Develop collection development plan
- Collect, evaluate and select resources
- Design, create and maintain the website

([Kovacs & Elkordy, 2000](#))

This would alleviate the unnecessary pressures and stress to librarians new to starting a library electronic resources collection.

Apart from that, White and Crawford added that it is useful for libraries to develop their own electronic resources collection development policy ([White & Crawford, 1997](#)). They pointed out that this policy would serve as a guideline when acquiring e-resources to support in an institutions’ program ([White & Crawford, 1997](#)). The policy would also assist in planning the budget allocation for e-resources and directing librarians in selecting various resource formats and justifying the acquisition of electronic resources ([White & Crawford, 1997](#)).

Mangrum and Pozzebon conducted a study of collection development policies from 41 schools to examine whether there existed clauses that addressed electronic resources matters ([Mangrum & Pozzebon, 2012](#)). In that study, 23 policies were found online. They examined the policies that contained criteria relating to electronic resources management. They discovered that the top five criteria were:

- Content
- Usability
- Responsible parties

- Licensing (user perspective)
- Costing

These criterion were mentioned somewhat in the libraries collection development policies. It demonstrated that libraries were incorporating certain elements of electronic resources into the collection development policies.

4 THE BEGINNINGS

Prior to the University start-up, there was a meeting in London (2008) hosted by the University for the senior administrative staff and faculty members. A survey was conducted on the faculty members to get their feedback on the resources needed (which also included electronic resources). This survey was carried out by one of the local vendors from the Kingdom of Saudi Arabia. Upon completion of the survey, a decision was made to move forward with the recommendations of the faculty members. The library project manager proceeded with the acquisition of electronic resources products. A substantial amount of budget was set aside for the subscription and ‘purchase’ of perpetual content. It is interesting to note that at that point of time, no professional librarian was involved in this acquisition process.

Discussions between the IT Chief Information Officer and library director were conducted to ensure that selection and access tasks were going as planned without any delays. As mentioned in the earlier paragraph, the local vendor was given exclusive rights for the design and implementation of the new digital library system. The library did not have much bargaining power in terms of negotiating the prices and license agreements. It was the absence of the library staff in the initial procurement phase that led to “over-inflated” prices.

5 EARLY DAYS OF ELECTRONIC ACCESS TILL PRESENT

When the University was opened in 2009, there was a demand for access to these electronic resources. Faculty members wanted to get access to electronic journals, electronic books and databases. One of the early challenges faced by the library were access issues. The Library had to constantly liaise with the Information Technology department to ensure that IPs had been set correctly. KAUST, at that point of time had “a state-of-the-art computer network” but it “was new and untested” (Zahrani et al., 2012). Authentication processes, IP address ranges and VPN “connections had not yet been entirely worked out” (Zahrani et al., 2012).

On the other end of the spectrum, negotiating electronic resources contracts with publishers “through several startup intermediaries was confusing and time-consuming” (Zahrani et al., 2012). The library managed to provide basic access to electronic journals within the first 3 months of operations (Zahrani et al., 2012). It was only after a year that our library managed to reach “comfortable maturity” on the e-resources access (Zahrani et al., 2012).

During the initial design phase, the appointed local vendor implemented a user interface for the access of the e-resources. This platform was called DigitalLibraryPlus. Our library users needed to register using their university email and generate a new password. Users were informed of their account activation after which they were able to access the various electronic resources titles.

At that time, the management of electronic resource information was conducted using Excel and a hard drive. Details such as publisher name, access status, product titles and access method were stored in an Excel file. This Excel file was regularly communicated to the library managers and the IT Chief Information Officer. The CIO was interested to know the access issues pertaining to the e-resource titles. Titles that were accessible were labelled in green while those that were problematic or inaccessible were labelled in red.

Library staff would communicate to the vendor on access issues and related matters. The vendor in turn would communicate to the publisher to relay the library messages. The publisher in turn would act accordingly to our library's requests. This posed a serious disadvantage for the library that will be explained in the later section.

6 THE TURNAROUND

The period of 2010 saw 2 major activities that changed the landscape of the electronic resources management for the University library. It was the time when the library decided to amend its procurement of electronic resources policy. During that year too, the Library migrated from DigitalLibraryPlus to the Integrated Library system from Innovative Interfaces, namely Millennium system as the backend and the dynamic Encore incorporated with Research Pro and CASE A-Z E-journals management system.

In 2010, during one of the Technical and IT services meeting, it was decided that our library would pursue a policy of dealing with the publishers directly. Previously, all our e-resources requests and issues were transmitted via an intermediate party (i.e. vendor). However, we noted that a number of our requests, especially issues related to access problems were delayed or slow in getting a response from the publisher. This created a backlog of access issues that were outstanding and needed remedy. In turn, this affected the users who are unable to get into the electronic resources due to technical issues.

Due to that fact, we amended and communicated the policy directly to more than 50 electronic publishers. In the email communication, we informed the publishers that we wanted to start direct business dealings instead of going through the 3rd party (local vendors). In the same email, we informed them that:

The Library Technical and IT section (through the Acquisition team) will be contacting them and undertaking the following tasks:

- Processing the renewals and all new products requests directly with the publishers.
- Negotiating the cost, issuing the purchasing orders, and following up on payments.
- Setting up the plan for support services with local vendors through bidding.

In addition to that, we informed them of the guidelines:

I. Renewals for current products:

- Renewal quotations: all renewal quotations must **come directly** from the publishers with the proper cost adjustment after taking off the vendors commissioning fee.
- Purchasing orders: After accepting quotation from publishers, we will issue the Purchase Order under the publisher's name which will be emailed to the publisher's contact person.
- Payment: All payments will be transferred to the publisher bank account directly.

II. Support services:

Indirect services such as provision of trainings for library users will be provided by local vendors and paid by the university. They will **compete for a support service contract** after the completion of the direct renewals for current subscriptions. All details of the service requirements and bidding process will be announced to all vendors.

We also informed the publishers that they would have yearly evaluations. Publisher performance would be evaluated by response to our after-sales requests and technical issues.

The impact of this decision was tremendous. We noted that most if not all of our technical issues were resolved within 2 days or less. Misunderstandings were reduced to a minimum as library staff communicated more with the publishers. New product releases and technical announcements reached library staff promptly. Payments to the publishers were timely and delays were non-existent.

7 NEW USER INTERFACE / INTEGRATED LIBRARY SYSTEM

During the third quarter of the year 2010, the library released integrated library system. We moved from the DigitalLibraryPlus system to the new Millenium system. The new Millenium system provided by Innovative Interfaces provided our users with more dynamic searches with more functions and features. The discovery tool, Encore, together with the federated search called ResearchPro allowed our users an enhanced and seamless access to the library electronic resources. Coupled with the CASE A-Z e-journal management system, library users were then able to obtain relevant information quickly.

For the management of electronic resources, the library obtained the Electronic Resources Management (ERM) module among the suite of back-end modules provided by Innovative Interfaces. We were relying on the Excel files to store all the details of our electronic resources. We moved most of the important details into the ERM later on. This included publisher name, product titles, contact details, expiry dates, link to license agreements and important ticklers (alerts). The information was from then on kept in a single repository to be more accessible to relevant library staff.

8 COLLECTION DEVELOPMENT

The Library Subject Specialists from the Research section played an important role in the assessing, evaluating and selecting the electronic resources for the library. Prior to assessing the electronic resources, the subject specialists were informed of new and latest product titles via emails, brochures, conferences and exhibitions as well as recommendations from faculty members. One important thing that the subject specialists needed to be aware of is that our university is predominantly a Science and Technology research-based institution. Therefore our collection is more slanted towards the Science and Technical collections instead of the STM (Science, Technical and Medical).

The assessment stage included getting feedback from faculty members, students, post-docs and researchers. Sometimes, the subject specialist negotiated trial periods from the publishers for the electronic resources product. Feedback was recorded during and after trial period. The Specialists also liaised with the publishers to obtain the usage statistics during the trial period.

Apart from that, the electronic resources were checked for their subject coverage and the relevancy of their usage with regards to the university research-based subjects available:

1. Biological and Environmental Sciences
2. Engineering, Computer, Electrical and Mathematical Sciences
3. Physical Sciences and Engineering.

To ensure that the library did not acquire irrelevant electronic resources, the specialists consulted and conducted face-to-face interviews with their respective faculty members. Each of the 3 subject specialists was assigned to specified schools. Direct communication proved useful to keep the library updated with the current trends and changes in subject matters.

9 SELECTION CRITERIA

Selection of these electronic resources were based on:

- Relevancy of the electronic resources with regards to the subjects taught in the university
- Price fitting into budget allotted or in other words value for money
- Currency of the information

Apart from that, the library used the IFLA guidelines on electronic resources collection development ([International Federation of Library Associations and Institutions IFLA, 2012](#)).

Apart from the criteria mentioned above, the library also scrutinized the following factors:

- IP Authentication (we would not subscribe to any electronic resources the username/password access method or the hard token)
- Accessible on the web (not on stand-alone computer systems) so that our users would be able to access these resources on or off campus
- Compatibility issues: Viewable on internet browsers on common operating systems such as Windows or Mac
- Information to be saved, printed or downloaded (within the allowed range)
- Usable interface for ease of searching and retrieval of documents

10 NEGOTIATIONS AND LICENSE AGREEMENT

Price and license agreements were conducted around the same time after the electronic resources had been assessed, selected by the specialist and approved by the Research manager. Research, Technology and IT staff worked together to negotiate with the publisher to agree to an acceptable price. After an agreement had been reached, the acquisitions team (Technical and IT section) took over from here. The acquisition team then prepared the necessary documents to expedite the payments. Publishers were checked against the procurement system to ensure that they had been registered. For new publishers, they were requested to fill up a supplier form and provide the library with their banking information. Purchase orders were raised and approved by Technical Services and Digital Access. Purchase orders together with the invoices were then submitted to Finance department for payments to the publishers.

License agreement terms were studied and checked by the subject specialists. The library has not appointed a specific staff to handle license agreements matters. The work is divided between Research section staff. Library staff communicates with the university legal team to

ensure that the agreements are not one-sided. One of the clauses that the library is checking is the “authorized users” and “authorized uses” among the other clauses.

11 IMPLEMENTATION AND MARC RECORDS

The Access and Digital Services Specialist will ensure that all the technical specifications can be handled by the present integrated library management system and web interface. One of the main tasks is to ensure that the electronic resources can be implemented and accessed by authorized users on or off-campus. Details of the electronic resources are entered into the ERM system such as publisher and product titles. The Access and Digital Services Specialist also ensures that link resolvers are activated for the products. This will increase the likelihood of the information being discovered by the user. Apart from that, this Specialist uses the Innovative Interface’s CASE E-journals A-Z management system to load the electronic journal titles and also to do a coverage load to the online catalog.

The Metadata Specialist, on the other hand, loads up the MARC details of the electronic books. This specialist will liaise with the publisher on obtaining and downloading of these files. Ensuring that our records are updated regularly is an essential task for our Metadata Specialist.

12 RE-EVALUATION FOR RENEWALS

One of the routine activities undertaken by the subject specialist is the re-evaluation and re-assessment of the electronic resources. They (subject specialists) used the same criteria for acquiring new materials. They (subject specialist) compared usage statistics for the present year against the previous year. In addition to that, they calculate the price difference to see the impact on our budget.

From the statistics and price comparisons, the subject specialists will then decide whether to renew or cancel the electronic resource product. However, there may be exceptions when the usage level is low but the product is critical to a particular department. Discussions will be held with the stakeholders to determine and re-affirm the renewal of that product. Price negotiations will also be another factor in this. Subject specialists have to ensure that the price of such products do not take a large percentage of the budget allotted.

13 FUTURE DIRECTIONS AND LESSONS LEARNT

Despite the odds, the library has managed to overcome the setbacks mentioned above while at the same time improved certain workflows and processes. One of the main concerns is getting all library staff trained on using the integrated library system – both front and back end. Trainings have been conducted and future ones have been planned for the library staff. The library believes that investing in library staff training is a crucial aspect of the personal development of the library staff. Another training component that the library is looking into is getting relevant staff competent in handling and negotiating license agreements terms apart from the technical trainings.

Library staff is also heavily involved in developing the collection development policy especially for the electronic resources approved by library management. This document

would serve as a basic guideline in the processes involved in the electronic resources workflow.

One of the important lessons learnt was that the involvement of professional librarians was crucial in the collection development and acquisitions processes of the electronic resources. Librarians bring along with them wealth of experience and knowledge to execute tasks. With the know-how and expertise in electronic resources management, librarians offer valuable insights in the initial setup and continual improvements of the workflow. Their contributions and feedback is immensely valuable especially during the initial stages of the electronic resources management.

The library is continuously striving to improve the electronic resources management. Library staff is looking into the various ERM products and discovery tools in the market and evaluating them as an on-going process. On top of that, usability studies have been planned in order for the library staff to better understand the information seeking behaviour of our users. The findings from the studies would form the groundwork for improving the existing interfaces to our electronic resources collection.

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