Shaping the strategy for e-books: A Hong Kong perspective

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Abstract

The shift in the production of books to a combination of paper and electronic versions means that librarians need to carefully consider the economics of e-book models together with user preferences to acquire the appropriate balance of electronic resources versus the printed formats. This paper examines the business models of four e-book aggregators and the factors affecting collection development decisions, such as usefulness of contents, pricing structure, access model, retention policy and functionalities. Results from the usage of netLibrary are included in the analysis to determine the extent to which e-books are needed to complement print collections.

Keywords: e-book strategy, collection building, business and access models, shared collection, netLibrary usage

1. Introduction

Libraries have begun to experience a shift in the production of both popular and scholarly books from paper-only to a combination of paper, print-on-demand and electronic versions (OCLC, 2003). Library users are quickly adopting new ways of information dissemination from PCs to PDAs (personal-digital-assistants or handheld devices). Yet, the traditional printed book continues to be published and is still needed. For libraries, the most important challenge is how to effectively combine new emerging formats with traditional printed formats and to balance budgeting priorities to offer users the latest in e-book contents.

With the continual rise in electronic materials, libraries need to carefully consider the economics of e-book models together with user preferences to acquire the appropriate balance of electronic resources versus the printed formats. An examination into different models in the market, the impact on library budgets, and the usage of e-books is necessary to guide future collection development decisions, and to encourage higher e-book usage rates.

This paper examines and compares the different business models of four e-book aggregators, two Chinese language and two English language collections. In particular, the Chinese e-book collections will be compared and contrasted against their Western counterparts. Some of the factors affecting collection development decisions, such as usefulness of contents, breadth of subject or discipline coverage, pricing structure, access or delivery model, title selectivity, retention policy, simultaneous access, functionalities and value-added features, etc. will be discussed. Results from the usage of the major e-book collection, netLibrary, are included in the

analysis to determine the extent to which e-books are needed to supplement, complement or to substitute print collections.

This study was instigated with the intent at the University of Hong Kong Libraries (HKUL) to: refine its strategy for collection development of e-book content; identify usage patterns and user preferences, acceptance and perception to guide future selection and acquisitions; explore the impact on print purchase; explore the impact on library budgets; improve on the implementation process; and encourage higher e-book usage.

2. HKUL collection building strategy for e-books

2.1. Background

The HKUL acquired its first Web-accessed e-books in early 2000 from netLibrary. E-books have existed on CD-ROMs and diskettes for many years before the Web-based version. HKUL's preferred platform has been the Web version for optimum access and ease of maintenance. Although the initial use of the 200 or so netLibrary books did not demonstrate immediate user acceptance, HKUL continued to invest in Web-based e-books, as the HKUL community generally showed very positive acceptance of Web-based electronic resources such as e-journals and full-text databases. E-book packages available for subscription and delivered via the Web appeared to be a logical next step in bringing a fuller array of electronic products to users.

Since introducing netLibrary e-books, subject or specialized collections, such as Early English Books Online (EEBO), have begun to enter the market. The HKUL has so far delivered about 104,019 (count as at November 2003) e-books in its digital collection to users via Web browsers. This number does not include public domain or titles in open-access collections downloadable for unlimited access, such as the Internet Library. HKUL's collection of notable e-books include EEBO, ebrary, knovel, Safari Tech books Online, IT Pro from Books 24x7, InteLex Past Masters, as well as a "unique" and a consortium "shared" collection of netLibrary books. HKUL recently acquired a Chinese e-book package called Apabi, which is a joint project of Peking University in China with a commercial vendor. Another major Chinese e-book collection, entitled Superstar, is currently under consideration.

2.2. Definition of e-book

The Joint Information Systems Committee (JISC) differentiates between two major types of e-books: electronic or digitized version of a whole text, and a database of linked materials, some of which may not exist in a print version, e.g. scientific encyclopedias containing interactive tables (JISC, 2003). The use of the term e-book in this article includes both types. Basically, there are four ways of accessing e-books (Hawkins, 2000):

- Downloadable e-books – usually public domain available from a Web site for downloading to user's PC using software.

- Dedicated e-book readers that require dedicated hardware with proprietary software.

- Web-accessible e-books available for a subscription fee or one-time purchase with on-going access fees.

- Print on demand books in which contents are stored in a system connected to a high speed and quality printer from which printed copies or chapters are produced on demand, a kind of computer-aided publishing but not true e-book delivered electronically.

For the purpose of this article, the term e-book generally refers to digitized versions of the full-text of a book that can be read on PCs, laptops, or PDAs and delivered via the Web using a Web browser or using software such as Adobe's e-book readers. It includes reference works, monographs, textbooks, scholarly publications, but usually excludes journal publications.

2.3. Initial e-book strategy

In the selection of e-books, HKUL initially favored several categories of e-books driven chiefly by the information needs of its faculty and students. The identified categories listed below formed the basic strategy to build the e-book collections, but the content selection and evaluation criteria were based on the same general criteria used for all types of electronic resources. HKUL's priorities were: items on heavy demand, core reference collections, monographs and textbooks, out-of-print scholarly materials, subjects of high IT awareness and notable collection with critical mass in multi-disciplinary fields adequately useful to complement or supplement the print collections in serving diversified needs.

The issue of purchasing multiple copies for course reading was frequently a topic of debate, as shelf space was reaching its maximum capacity. Online delivery with simultaneous access was perceived to eliminate the need for multiple copies. This was true for textbooks, required course reading materials, as well as for computer software manuals and reference works which

frequently needed to be weeded as they became obsolete. Other added value or advantages of e-books are similar to the benefits of full-text electronic journals or full-text databases, although not all e-books offer them to the same degree. The commonly perceived benefits include: 24/7 access which is especially beneficial for part-time and distance learners, full-text searchability across the collection, ability to link to other resources, improved currency of materials, savings on maintenance and staff-time, saving on shelf space, usage statistics to aid in collection development and management, and use for electronic reserve.

3. HKUL e-book study

This study examines the four major factors used to guide the library in building its e-book collection: usefulness of contents, vendor's business and access model, added-value functionalities, and usage. Except for the study on usage, which will focus on netLibrary, each of the other three factors will be examined in the context of four selected e-book collections chosen for this study, namely netLibrary, ebrary, Apabi, and Superstar. The discussions on the findings will focus on the comparison and contrast between the Chinese language e-book collections and their Western counterparts.

3.1. Usefulness of contents

Subject librarians consistently aim for quality content with scholarly and research value that can be delivered over the Web for optimal access at a reasonable cost, and which complement Web-based e-journal subscription packages. The selected e-book collections examined in this

article are multi-disciplinary packages (aggregated or individually selected by title), intended for the academic library market and which generally satisfy the aim for quality content. However, the degree of usefulness, which is usually a determinant of usage, depends on the breadth and depth of coverage and the age or currency of the contents.

netLibrary, ebrary, Apabi and Superstar are similar multi-disciplinary and aim to be as comprehensive as possible. The four collections, however, are not entirely similar in terms of subject coverage and currency.

3.1.1. Selectivity: Aggregation versus single title

For libraries that require more flexibility in budgeting and control over the titles they purchase, netLibrary offers title-level selection as well as subject, publisher and language packages. On the other hand, if acquiring critical mass of contents was the goal, title level selection may not be the most practical. ebrary, which offers e-books as an aggregated database, might be more appropriate.

Regardless of whether title-level selection is offered, both netLibrary and ebrary suffer due to difficulty in securing distribution rights as an increasing number of publishers become directly involved in online e-book publishing. Publishers such as Gale and Marcel Dekker have their own platforms that offer unlimited access, and do not allow netLibrary to sell to consortia. Similarly, ebrary withdrew about 300 titles in the past two years for various reasons.

The two publishing strategies developed for e-journals, i.e. aggregated databases and individual title distribution systems are now being employed in the marketing of e-books. Aggregated databases help to achieve a critical mass at a relatively low cost. But libraries also need some selectivity when dealing with expensive, specialized or unique titles. In developing an all-round e-book collection, HKUL juggles to balance these two factors, as they have when developing its e-journal collection.

3.1.2. Currency of materials

In terms of currency, Apabi and Superstar differ significantly from their Western counterparts. While Apabi has only about a sixth of the number of titles that Superstar boasts, over 82% of its titles were published in 2000 or after. This is almost double the percentage of newer books in netLibrary and contrasts strikingly with Superstar, which boasts only 20% of its titles being published after 1998.

The lack of current materials in Superstar could probably be attributed to the fact that the majority of the collection was developed using print copies of books contributed from participating libraries. While Superstar has professed that they have secured copyright permission through copyright clearance agencies and direct from the authors and publishers, this practice is quite unorthodox. On the other hand, Apabi, similar to netLibrary and ebrary, develops its content by forming partnerships with, and getting distribution rights, from university presses and other scholarly and commercial publishers.

Currency of certain types of materials is considered crucial. These include reference works and subjects which undergo rapid changes and development, such as computer science, technology, business, e-commerce, *etc*. Generally, statistics show higher usage in terms of number of access for current materials than for older materials regardless of subjects.

3.2. Business and access models

The most common purchasing models with which librarians are familiar are the leased or subscription and the acquired or purchase model. In the subscription model, a fixed annual cost is paid to access the content. In the purchase model, typically an upfront one-time fee is paid to purchase the content in addition to a small annual access fee charged for server maintenance. A study conducted at the California State University Libraries (CSU, 2002) suggested that the subscription model was better suited for contents or subjects with shorter shelf life, such as computer science, or business, as well as some reference works. The same study suggested that the purchase model, either by individual title selection or "aggregated" in subject collections, was more desirable for works of lasting or historical value, such as disciplines in the humanities and social sciences. In any case, the acquisition model is imposed on libraries by the vendors, each with its pros and cons.

Subscription model for e-books is not favored because contents are never owned and annual subscription expenditures may escalate while titles in the "permanent" collection show no increase. Therefore, this model serves only to supplement rather than replace collection and would only be viable for very high demand titles that date rapidly. (Landesman, 2002). Lynch refers to this new "threat of vanishing collections through license agreements" as "planned

content obsolescence" (Lynch, 1999). On the other hand, subscription offers an easy and cheaper way to get access to a lot of content, but may not be considered economical in the long term.

The purchase model also has its shortcoming, since an e-book purchase does not necessarily mean the library has an archival copy in a format which can be migrated forward to current formats, operating systems, and other technological impediments to remain readable (Jantz, 2001). Other concerns include the lack of provision for interlibrary loans and simultaneous or multiple access specifically for course reserve. None of the e-book collections included in this study makes provision nor addresses the issue of interlibrary loan and course reserve, except for Safari, which explicitly allows a faculty use of up to 2 sections of the books on a university or school intranet.   All explicitly disallow the licensee the right to grant any third parties the right to use any e-book, except for sharing among consortium.

netLibrary's model is to a large extent based upon the traditional model for print books. netLibrary offers subscribing libraries the option to receive their e-books on DVD or another securable medium. In this sense, netLibrary's model addresses the concern about ownership and perpetual access to content by providing the kind of security that printed books offer, yet there seems to be other uncertainties and trade-offs. For example, it is unclear how libraries will provide access to the thousands of DVDs without the netLibrary Web platform.   The print copy and archive metaphor also mean that only one user is allowed to access 'a copy' of a title at a time and only for a definite number of days or hours.

3.2.1. Apabi, a different ownership model

If the netLibrary model seems unsatisfactory, Apabi's pricing models could be considered a step ahead in addressing one of ownership concerns. There are two basic pricing models, one of which is available only to the domestic China market. In this model, the library pays an upfront one-time fee to purchase the platform. The content is purchased separately, similar to netLibrary, with each title charged per copy based on its list price. Since the platform or system access has been paid for in one lump sum, there is no access fee attached to each individual e-book. Libraries that opt for this option can elect not to receive the platform and e-books. They may continue to access Apabi's remote servers and defer local hosting until a later time as they see appropriate. If the library chooses to host locally, Apabi has the responsibility not only to provide technical support to ensure all works well, but also to upgrade the platform at no additional cost.

What does this pricing model mean to libraries? Libraries that see Apabi as a long-term solution to their e-book needs and accumulate a sizeable collection, the one-time platform fee will be equalized after a number of years. More importantly, the model means true ownership, where access is not contingent upon the availability of a suitable platform somewhere else.

Apabi's model for the international customers resembles the netLibrary model more closely.As of the writing of this paper, there are still further details to be worked out for the Hong Kong consortium. For example, it has been agreed that consortium members could have a mix of the one-time and annual options. It has also been agreed that consortium members could cross-access each other's titles using a limited number of login/passwords on designated computers. This might prove to be a workable solution for resource-sharing or interlibrary loan,

given that members of the Hong Kong consortium do not intend to share copies via IP-controlled access.

3.2.2. ebrary and Superstar

Both netLibrary and Apabi employ the one-book one-user for a definite time model. ebrary, on the other hand, offers a subscription model price based on student FTE (full-time equivalence) count, with simultaneous, multi-user, and unlimited-time access to their databases of e-books, following the aggregated e-journal database model. The trade-off is a lack of ownership and loss of access to the content when the subscription terminates.

A more ideal access model, analogous to the e-journal subscription access model, would be perpetual access with unlimited simultaneous access. This model is being adopted by publishers such as Wiley, Kluwer, ABC-Clio, in addition to Dekker and Gale for their e-book offerings.

While negotiation with Superstar is still on-going, it appears that the Superstar pricing model being offered to HKUL resembles such a model (*i.e.* perpetual access with unlimited simultaneous access). A tier price structure based on the purchase volume determines the cost per book. There is a flat annual maintenance or access fee, and similar to Apabi, HKUL can choose to access remotely or via a local host. In addition to the maintenance fee, there is another price tag attached to the server if local hosting is opted, but at least perpetual access can be guaranteed. Regardless of whether access is to a remote or local host, there are no restrictions on the number of simultaneous users per book or system-wise, and no checkout times.

3.3. Functionalities offering added value

According to a JISC report, the variety of software and hardware products associated with e-books has caused confusion for users and consequently resulted in a barrier to adoption for some. Although some HKUL users indicated in a March 2004 survey that they would like more extensive collections of e-books because of the ease and convenience for reference use and browsing on the Web, yet comments on the disadvantages included: lack of common interface, poor image quality, loading time too slow, limited printing, hard to flip pages and read through and difficult to "borrow" electronically.   At HKUL, while users perceive e-books to be quite useful, their ultimate acceptance will depend on the value-adding functionalities delivered to them.

The e-book collections in this study are all Web-based distribution systems and do not require proprietary handheld e-book devices.   Nevertheless, they all use different Web or PC-based readers, which differ in navigation, export functions and special features.

3.3.1. Reader

netLibrary e-books can be read with an ordinary Web browser, although sometimes Adobe Reader is required to read PDF-formatted materials.   ebrary e-books are in PDF format, but requires the Web browser plug-in, ebrary Reader, instead of the Adobe Reader.   In both cases, the user is required to be online, although libraries can also license Adobe's Content Server software to loan their netLibrary PDF e-books for offline reading on a PC, notebook, or PDA.

Apabi uses ApabiReader, a PC-based client that is very similar to netLibrary's retired offline reader. Each selected e-book is downloaded to the reader *cum* manager. Users can check-out a limited number of e-books per week as pre-set by the library, and read them offline, but only for the pre-set checkout times. The e-books are "checked-in" automatically at the end of the loan period.

Superstar uses the SSReader *cum* manager, also a PC-based client. Users can choose to open and read e-books while online, or download them for reading offline. The set up is similar to that of netLibrary before the offline reader was retired. The biggest difference, as mentioned, is that multiple users can access the same e-book and download it for unlimited use.

All four e-book readers provide a wide range of functions and features, although the functions available might vary depending on the format of the e-book in use. To use the personalized features, netLibrary and ebrary require users to set up individual accounts online. Their personal details, including bookshelf, bookmarks, are stored on the Web servers and can be accessed from anywhere. On the other hand, Apabi and Superstar's readers are PC-based and any data and personal information are meant to be stored and used on one machine and are not suitable for public work-stations.

3.3.2. Searching and navigation

Searching all four collections online at their Web sites without downloading the readers is possible. All four collections provide subject browsing and bibliographic searching in different degrees of sophistication. All except Superstar support full-text searching of e-books across the

system. In all four cases, basic bibliographic information is provided on the search results page for each e-book found, such as Author, Publisher, Subject, but Apabi also provides a brief abstract.

All readers, except for the Superstar reader, support full-text searching within the e-book being read, but the netLibrary and ebrary readers also allow one to full-text search all e-books. With netLibrary and ebrary, in most cases, users can also move between chapters and sections by clicking on the desired unit on the TOC tab on the tool palette. Apabi and Superstar readers do not have such a feature, although some Apabi e-books have hyperlinked TOCs and all four readers have the Go to Page function.

3.3.3. Export functions for printing

netLibrary, ebrary and Apabi readers all restrict copying and printing to different extents. Text copying is usually one page or less at a time. Zero to multiple pages may be printed depending on the restrictions placed by the publisher of the book and the e-book format. Apabi only allows text copying and no direct printing. Superstar imposes no restrictions on printing, although text copying requires the use of the OCR (optical character recognition) function. Both netLibrary and Superstar support image or snapshot copying.

To accommodate the various versions of Windows and Chinese character sets, different versions of Superstar reader are available. In the case of Apabi, certain versions of Windows may require the installation of a language pack. While it seems that there are no problems viewing or printing e-books, text copying remains problematic with certain settings. As of the

writing of this paper, Apabi is about to release a new system platform which will support features such as check-in, request, loan history and online reading.

3.3.4. Special features

Some special features common in the four readers mentioned above are Bookshelf, Bookmarks, Notes, and Highlighting. The ebrary reader allows hyper-linking from internal interactive text to external resources on the Web, such as dictionaries. The netLibrary reader has a built-in dictionary, and certain Subject Centers also support hyper-linking to external resources. It allows multiple books to be opened at the same time. Apabi has a built-in text to voice feature.

3.4. Usage of netLibrary

HKUL started off with a unique collection in the year 2000, and subsequently joined the international consortium called CCDM (a consortium made up of four US academic libraries - Columbia, Cornell, Dartmouth, and Middlebury) to create CCDMHK (HK for HKUL) in 2003. Joining the CCDM netLibrary consortium was a unique opportunity for HKUL to acquire a critical mass of e-books in one platform at a shared cost.

There was some immediate concern raised by faculty as to whether the contents of a shared collection would be pertinent to the needs of HKUL users. To address this particular concern, a usage study was conducted to discover the following aspects:

1. How well used is the collection at HKUL?

2. Does usage vary among subject areas and publication years? Are there patterns of high demand and low demand that one could identify?

3. How is usage compared to the print equivalent?

4. Is there a difference in usage between the HKUL collection of 2466 titles and CCDMHK collection of 11,876 titles?

5. What is HKUL's access percentage among CCDMHK consortium members? Is the CCDMHK shared collection suited for HKUL users?

Since the CCDMHK collection was launched in April 2003 at HKUL, unless otherwise stated, usage statistics for the period April 2003 to February 2004 were used in the following analysis to allow proper comparison of the HKUL and CCDMHK collections.

1. How well used are the collections?

From April 2003 to February 2004, the HKUL and CCDMHK collections were accessed 11,055 and 28,342 times, respectively, by HKUL users. The accesses were accounted for by 1,656 (67%) of HKUL's 2,466 titles and 5,508 (46%) of CCDMHK's 11,876 titles.

When compared with some university libraries' usage of netLibrary, it might appear in terms of percentage that HKUL's usage of the two collections is not very high. For example, the California State University (CSU) reported that 94% of their 1,522 titles were used during their year-long study in 2000/2001. A number of points are worth noting in the HKUL case:

- The total number of accesses of the HKUL collection has grown from 1,901 in year 2000, 7,557 in 2001, 13,104 in 2002, to 13,828 in 2003. This represents a six-fold increase in the course of four years.

- Similarly, the CCDMHK collection has shown substantial increases in usage since its launch. For the first two months after the loading of MARC, the number of accesses jumped to 3,003, compared to 247 before loading, and 1,342 titles (11%) of the collection were accessed. These figures have since increased multi-fold.

- HKU has a student population of around 15,425. This means the number of access per student is around 0.71 accesses per student for the HKUL collection, and 1.83 accesses per student for the CCDMHK collection. (The CSU access per student was 0.44 based on a student population of 388,700).

2. Does usage vary among subject areas and publication years? Are there areas of high demand and low demand that could be identified?

A review of HKUL's netLibrary usage shows fairly similar patterns of subject usage to those of other universities. In terms of the number of accesses, the heaviest use areas are Business, Economics and Management (BEM) and Medicine. For the HKUL collection, BEM and Medicine accounted for 21% (2,343) and 15% (1,614) of all accesses. For the CCDMHK collection, the same two areas accounted for 24% (6,815) and 13% (3,751) of all accesses. Other subject areas that were quite heavily used in both collections included Biology and Life Sciences, and Social Sciences-General (See Table 1).

[Tables 1 and 2 approximately here]

The number of accesses is only one measure of use. As noted by Langston in the CSU study (Langston, 2003), since subjects with the most titles generally receive the heavier use, it would be useful also to examine the use of a subject area's titles relative to its size. For this purpose, the *"ratio of use"* concept as defined by Langston being the ratio of "the percentage of total

18

accesses" divided by "the percentage of titles" in a subject area was adopted (Langston, 2003). The subject areas with the highest ratio of use in both collections are (See Table 2): Biology and Life Sciences, Language and Linguistics, Mathematics and Statistics, Medicine, Psychology, Computers, Technology, Engineering and Manufacturing, Chemistry, and Business, Economics and Management (BEM). This finding confirms that both BEM and Medicine are indeed high demand areas. It also shows, however, that there are other subject areas that have fewer accesses, but are actually in high demand.

3. How do print and e-book usage compare?

For this comparison, a match of the CCDMHK and HKUL titles against print holdings was conducted. It was found that 6,950 titles were available in both print and electronic formats. Due to system limitations, only usage data for print copies for the period July 2003 to March 2004 were retrievable. For the said period, 4,017 (58%) titles were used in electronic form, whereas 2,873 (41%) titles were used in print. The data seemed to suggest that the preferred mode of access was electronic, however, the preference for electronic mode did not apply to any particular subject area.

A breakdown of the print and electronic collections usage by subject shows that subject areas that were heavily used in print were also heavily used in electronic form. These included BEM, Medicine, Computers, and Language and Linguistics. Similarly, subject areas that were not well used in print also received little use in electronic format. This contrasts with the CSU's study and poses some questions as to whether it is indeed the case that certain subject areas do not lend themselves to the electronic medium, or if there are other reasons for the low usage.

The finding is surprisingly useful, since a recent HKUL user survey (March 2004) found a lack of acceptance of e-books in terms of user attitude. The results showed that only 29% of the 2,564 respondents favored e-books over the print version, against 69% that favored electronic-journals over print journals. A longer period of study might be necessary to establish a solid conclusion, as the difference between 'reality' and 'perception' is worth further investigation.

4. Is there a difference in usage between the HKUL and CCDMHK collections?

This point has been addressed to an extent in point 2 above. In terms of subject usage, the patterns are quite similar between the two collections, with the fairly clear exception of Computers. There are, however, two interesting points to note:

- *The critical mass factor*. netLibrary studies that compare smaller local collections with larger consortium collections have concluded that users in general are attracted to larger collections of e-books. This seems to be the case also for HKUL. While a lower percentage of the CCDMHK collection was accessed in the past year compared to the HKUL collection, the CCDMHK collection is actually attracting more attention and use. How so? For the first 11 months after the launch of the HKUL collection, only 558 (23%) of the 2,466 titles were used. The speed of adoption among HKUL users of the CCDMHK collection was much faster, with 46% being used for the same length of time since the launch in April 2003.

- *Hidden needs*. The larger consortium collection also means users have access to titles that would less likely be selected and made available in a smaller local collection. One such example is Sports and Recreation, of which HKUL selected no titles in 2000. The CCDMHK collection includes 106 titles on the subject and half of them have been used by HKUL users.

5. What is HKUL access percentage among CCDMHK consortium members? Is the CCDMHK shared collection suited for HKUL users?

The CCDMHK consortium adopts the Patron Driven Access (PDA) model, i.e. purchase initiated by the third click of a title. In building this shared e-book collection, there has always been the concern among faculty and librarians that needs of individual libraries may differ due to different curriculum and research focus. Hence, there is a need to find out how HKUL has fared compared to other members in the use of the CCDMHK collection, as ultimately the libraries with the most accesses tend to have 'the biggest say' in shaping the collection. In terms of subject preference, do HKUL users have the same subject preferences as those of other members?

Figures on CCDMHK usage were provided by netLibrary for the period January 2003 to February 2004. Using the number of accesses as a measure, Columbia and Cornell accounted for 35% and 27% of the total CCDMHK usage. HKU, which is ranked middle in terms of user population, also came in third in terms of usage, accounting for 20% of the total CCDMHK accesses. The finding is quite encouraging in that the data suggest that HKUL does have a reasonable amount of input in developing the collection. Since HKUL only joined CCDMHK in April 2003, it also means that our participation would have been likely higher than indicated by the survey and usage is likely to increase over time.

The concern over uneven subject usage of the CCDMHK collection among members was not proven. Statistics show that HKUL users' subject preferences match with those of the CCDMHK consortium as a whole, sharing five of six of the most heavily used subject areas: BEM, Medicine, Computers, Social Sciences, Biology and Life Sciences and Literature.

The original intention of the Patron Driven Access model to allow cooperative collection development among libraries and to invite user participation in shaping the collection, given broadened access to contents not yet purchased, has achieved positive results in the case of the CCDMHK consortium. Other studies have found that librarians and selected faculty members might not be able to accurately project the users' interests. Quoting from Lynn Sutton's ACRL paper, "Librarians have no future in guarding the gates and allowing only selected titles to come through" (Sutton, 2003). Users are accustomed to Google, Amazon, and e-Bay, where the most is offered and where they are self-sufficient.

Usage in terms of accesses only does not show the pattern of use for e-books or the types of materials attracting most use. Usage needs to be considered in the context of the user population size, collection size, imprint date, and nature of use in order to be meaningful. E-book vendors need to improve the types of usage statistics (e.g., include number of pages browsed) to help libraries understand the usability of e-books.

4. Conclusions

The e-book collections surveyed in the study offer limited but different emphasis on the range of subjects and disciplines covered. The limitations are sometimes a result of the problems in securing permanent distribution rights with partner publishers. Libraries aiming for breadth and depth of coverage to complement print collections will need to consider not just one major multi-disciplinary collection, but preferably a mix of these collections to achieve the widest selectivity that one gets with print from the universe of publication. Aggregated databases may help to

22

achieve critical mass at relatively low cost and to alleviate the manpower needed for individual title selection similar to an approval plan. At the same time, some discretion in selectivity is needed for flexibility to control the budget, eliminate overlap and ensure quality.

In considering the usefulness of content, currency of the collection is a factor. The collected statistics show higher usage in terms of number of access for the more current materials than for older materials regardless of subjects.

The type of business model for purchase and access that vendors impose on libraries each has its pros and cons. The Chinese e-book vendors seem to be more flexible and offer more options in their pricing structure, consortium offers, and retention for ownership access than the Western counterparts. Apabi offers a true ownership model by giving the library an option to purchase the platform outright with technical support and enhancements provided by the vendor. Superstar's model is even more ideal with perpetual and unlimited simultaneous access, without the constraints of "borrowing" or check out times.

In terms of functionalities, all the e-book collections surveyed provide a range of value-added features and functions. The ability to support full-text searching across the collection is perhaps the most essential, and what all users expect from using electronic resources. Superstar is the only one that now lacks such full-text searching capability, but is being developed. Linking to additional resources is also another valuable feature, which is built-in to the major Western e-book collections.

Results on usage of the netLibrary collections clearly indicate that use of e-books will increase over time, especially when implementation is well planned with MARC records loaded in the catalog, the service is well-promoted and user education is provided to all user groups. At HKUL, a special e-book exhibition and a series of instruction classes were offered in September 2003 as part of the promotion program. Both usage and awareness have been raised as indicated by statistics and positive comments from faculty and students.

Certain subjects attract higher use. In terms of access counts, BEM and Medicine scored the highest, but when the "ratio of use" is applied, Biology and Life Sciences and Language and Linguistics ranked first and second, BEM only ranked ninth and Medicine ranked fourth. However, a breakdown of the collections by imprint date reveals that recent publications are used more often. In comparing the use of the electronic version against the print equivalent, data indicates that more titles were used in electronic format, but this preference for the electronic version does not apply to any particular subject areas. This usage study confirms that critical mass is important to attract better usage, but there are always hidden needs which may have been overlooked.

The percentage of HKUL usage of the shared CCDMHK collection indicates that faculty and students of HKU are using the collection as extensively as library users of the other four consortium members. HKUL has therefore made a significant contribution to the development of the CCDMHK collection. Statistics also shows that HKUL users' subject preferences are similar to those of the consortium, thereby suggesting that HKUL needs are in fact quite similar. The Patron Driven Access consortium model allows for cooperative collection development with the advantage of gaining broadened access to a wealth of contents not yet purchased. Thus, even

if members' needs vary to an extent but keeping in mind hidden needs, it is still a very unique opportunity and economical means to build a critical mass in an e-book collection on a cost-sharing basis by joining CCDM.

4.1. Impact on print purchase and on future budget

At HKUL, all e-book expenditures, one-time or recurring, have been treated as electronic-resources expenditures, and most of the one-time upfront costs for purchasing e-books have been supplemented by funds other than the library materials budget. Although HKUL was fortunate enough to have some start-up funds in building its e-book collection, the acquisitions of e-books is beginning to show some impact on the purchase of print monographic titles. It is envisaged that future development of the e-book collections will require a more significant but gradual shift of print budget for monographs to the e-book budgets, analogous to the budget shift of print to electronic journals to cover all the recurring expenditures for site licensing of leased materials.

Summerfield hypothesized that because online books have lower lifecycle costs, libraries may actually face lower costs if they switch to e-books (Summerfield, Mandel and Kantor, 2001). However, e-book price is higher than for print, because electronic rights remain with the author unless separately assigned and does not come with print rights, and the fact that value-added features also come at a price (Poynder, 2002).

4.2. Future direction

HKUL plans to continue to develop its e-book collections to complement its print collections. In doing so, its strategy for e-books will be continuously refined to balance user needs for both print and electronic formats. It will also take into considerations the on-going developments in the publishing arena to resolve the outstanding issues and concerns about e-book licensing, access and usability. HKUL will also consider any opportunities and challenges to lead in building shared e-book collections with critical mass with the local consortium of libraries for local collection needs, as well as for the benefit of e-learning in distance education programs.

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Table 1
Measure of use (Accesses)

CCDMHK collection			
Subjects	**No. of titles**	**No. of titles accessed**	**No. of accesses**
Bus, Econ & Management	2159 (18.2%)	1189 (55.1%)	6815 (24%)
Medicine	876 (7.4%)	595 (67.9%)	3751 (13.2%)
Computers	772 (6.5%)	510 (66.1%)	2767 (9.8%)
Social Sci General	1649 (13.9%)	661 (40.1%)	2649 (9.3%)
Biology & Life Sci	232 (2.0%)	116 (50%)	1561 (5.5%)
Literature	991 (8.3%)	343 (34.6%)	1270 (4.5%)

HKUL collection			
Subjects	**No. of titles**	**No. of titles accessed**	**No. of accesses**
Bus, Econ & Management	481 (19.5%)	336 (69.9%)	2343 (21.2%)
Medicine	259 (10.5%)	219 (84.6)	1614 (14.6%)
Biology & Life Sci.	120 (4.9%)	87 (72.5%)	938 (8.5%)
Social Sci General	241 (9.8%)	144 (59.8%)	743 (6.7%)
Psychology	117 (4.7%)	92 (78.6%)	715 (6.5$)
Language & Linguistics	90 (3.6%)	73 (81.1%)	606 (5.5%)

Table 2
Measure of use (Ratio of use)

CCDMHK collection			
Subjects	**No. of titles accessed**	**No. of accesses**	**Ratio of use**
Biology & Life Sci	116 (50%)	1561 (5.5%)	281.9
Language & Linguistics	136 (67%)	1073 (3.8%)	221.5
Mathematics & Statistics	124 (73.8%)	886 (3.1%)	221
Medicine	595 (67.9%)	3751 (13.2%)	179.4
Psychology	188 (60.3%)	1198 (4.2%)	160.9
Computers	510 (66.1%)	2767 (9.8%)	150.2

HKUL collection			
Subjects	**No. of titles accessed**	**No. of accesses**	**Ratio of use**
Biology & Life Sci	120 (4.9%)	938 (8.5%)	174.4
Language & Linguistics	90 (3.6%)	606 (5.5%)	150.2
Medicine	259 (10.5%)	1614 (14.6%)	139
Psychology	117 (4.7%)	715 (6.5%)	136.3
Chemistry	74 (3.0%)	440 (4%)	132.6
Physics	62 (2.5%)	341 (3.1%)	122.7