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An Account and Analysis of the Implementation of Various E-Book Business Models at Queensland University of Technology, Australia

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Abstract

Queensland University of Technology (QUT) is a leading university based in the city of Brisbane, Queensland, Australia and is a selectively research intensive university with 2,500 higher degree research students and an overall student population of 45,000 students.

The transition from print to online resources is largely completed and the library now provides access to 450,000 print books, 1,000 print journals, 600,000 e-books, 120,000 e-journals and 100,000 online videos. The e-book collection is now used three times as much as the print book collection.

This paper focuses on QUT Library's e-book strategy and the challenges of building and managing a rapidly growing collection of e-books using a range of publishers, platforms, and business and financial models. The paper provides an account of QUT Library's experiences in using patron-driven acquisition (PDA) using e-Book Library (EBL); the strategic procurement of publisher and subject collections by lease and outright purchase models, the more recent transition to evidence-based selection (EBS) options provided by some publishers, and its piloting of e-textbook models. The paper provides an in-depth analysis of each of these business models at QUT, focusing on access versus collection development, usage, cost per use, and value for money.

Introduction

QUT (Queensland University of Technology) is a leading Australian university located in the city of Brisbane. QUT Library supports the university through the provision of its learning support services, research support services, and collections of online and print resources. Its monograph collection consists of 600,000 e-books and a much reduced print collection of 450,000 books. The 2015 Library resources budget is about \$14 million, of which 93% will be spent on online resources, \$1.5 million on e-books, and \$500,000 on print books.

QUT Library buys resources intending them to be used. QUT Library users now make one million e-book uses and 400,000 print loans, holds and renewals a year, and nine million full-text journal article uses per annum.

The Library is e-preferred and prefers access over ownership models. Approval plans with book suppliers are used. Patron-driven acquisition

(PDA) has been the major means of providing access to a large number of e-books via e-Book Library (EBL, a ProQuest business) since 2005, with over 300,000 EBL titles now available. The JSTOR demand-driven acquisition (DDA) collection was introduced at QUT in early 2015.

From early 2015, the Library sought to diversify its e-books procurement options by trialing a range of evidence-based selection (EBS) offerings from Elsevier, Taylor & Francis, and Wiley. This paper provides a detailed account of QUT Library's experiences with both PDA/DDA and EBS and e-textbook e-book business models and makes some observations and suggestions on collection development, usage, and affordability.

Literature Review

A number of papers were found to specifically assess the PDA or DDA models. Goedeken (2015) provides a history of the PDA model and an account of three examples of e-book collecting in libraries using ebrary PDA, ebrary Academic

Complete lease model, and selection via YBP-approval plans at Iowa State University. An understanding of user behavior and the availability of large leased content collections was thought to empower libraries to provide better collection services to clients. Miller (2015) and Downey (2013) found that DDA e-books were more used than print books. Cramer (2013) explains the business model and speculates on some of the effects of DDA on the collection development activities of libraries (how it interplays with other selection, procurement, and access models) and on scholarly publishing. Proctor (2012) advises libraries to procure e-books and especially older titles using PDA and to firm order where there is evidence of demand, rather than signing up to large collections of back titles for which there may be limited demand. e-Book packages are beginning to resemble e-journal big deals and are mixing content libraries want with content they don't. Herrera (2012) provides an account of collection development with respect to e-books at the University of Mississippi and how a limited PDA trial was undertaken with two subject collections. It was found that PDA access could support the development of interdisciplinary collections, but would require a broad profile supported by additional funds, and balanced with other collection development approaches could provide the best of both access and collection development goals. Harloe (2015) describes the application of DDA to a consortia library model and how costs can be shared across member libraries. Only one paper (Proctor, 2015) was found to review the EBS model (where it was called the sunk cost model) and in this instance the Elsevier EBS product at the University of Wyoming. The author recommends libraries carefully consider their initial level of investment as many academic monographs have low demand and circulation.

QUT Library's E-Book Collection Development History

QUT Library's e-book collections have grown to over 600,000 in ten years. The *Library Collection Development Manual* includes section CDM 3.2.1 Electronic Books and CDM 5.1 High Use Materials, which are most relevant to this paper. About 70%

of the Library resources budget is spent in foreign currencies (not Australian dollars) and purchasing power has been greatly affected by the Australian dollar moving from US\$1.10 in 2011 to below US\$0.70 by late 2015.

QUT Library's EBL profile has generally included all titles from 2006 onwards. Short-term loans (STL) are made available for the first three usages of a book and auto-purchases are made on the fourth use. The combined effects of increased usage, rising costs imposed by publishers, and a weakening local currency exchange rate against the US\$, has had the effect of greatly increasing QUT Library's EBL costs from A\$352,000 in 2009 to \$853,000 in 2013 and up to \$1.6 million in 2014. Usage during this time has increased from 11,401 STLs and 1,712 auto-purchases in 2009 to 33,411 STLs and 4,647 auto-purchases in 2014. The 78% increase in EBL costs between 2013 and 2014 (USD) was very largely a result of increased demand, which from June 2014 has been exacerbated by publishers increasing STL costs from 10% to 15%, and to as high as 60% of the purchase price of the book. As a result, the average STL cost has increased from US\$12.90 in 2013 to US\$20.63 (60%) in 2014, while the average auto-purchase cost increased from \$116.44 to \$161.45 (39%).

In 2015, the Library allocated A\$1 million for EBL and opted to implement mediation on all patron requests in mid-2015. To reduce demand, access to mediated rental titles was removed from ProQuest Summon and provided via the classic catalogue and the EBL native interface only. For 2015, the Library also wanted to diversify its e-book purchasing by implementing EBS with Elsevier, Taylor & Francis, and Wiley.

In the twelve months prior to the EBS, QUT's use of Elsevier titles via EBL was high, with 2,017 STLs and 230 autopurchases, costing US\$72,612 and \$58,901, respectively. The library could afford to license a limited EBS to update its previously acquired subject collections and include one new discipline, and the corpus comprised 1,155 titles with publications years 2009–2015 at a precommitment cost of US\$79,615 (A\$101,149). QUT Library would own 377 titles at the end of the EBS 12-month period based on US\$211 per

title average. 969 duplicating titles were removed from QUT's EBL profile.

QUT's use of Taylor & Francis and associated imprints was high and QUT spent US\$271k on 9,706 STLs and US\$340k on 1,527 autopurchases on EBL in the twelve months prior to the EBS. Taylor & Francis would license only five times the value of titles compared to the up-front commitment, and a limited budget restricted QUT's EBS corpus to titles in EBL with copyright dates from 2012 to 2015. An EBS collection of 7,765 Taylor & Francis titles costing GBP136,557 (A\$269,822) was implemented in March 2015 and duplicating titles were removed from QUT's EBL profile. At the end of the EBS period QUT Library would own 1,411 titles based on GBP96.73 per title average list price. The EBS model allows the library to own more of the content.

QUT's use of Wiley titles via EBL was also high, with 4,035 STLs costing US\$90,795 and 654 autopurchases costing US\$164,469 in the twelve months prior to the EBS. 16,665 Wiley online books including 2015 publication dates costing US\$105,000 (A\$140,788) were implemented on the usage-based collection model (UCBM), and 10,061 duplicating titles (or 60% of the UBCM content) were removed from QUT's EBL profile. There were 1,583 owned EBL titles that were duplicates of the UBCM and these were left in the UBCM to be eliminated from the final selection of perpetual content. At the end of the EBS period QUT Library would own 621 titles based on average cost approximately US\$169.

One hundred and forty JSTOR DDA titles were implemented in March 2015 with a US\$5,000 (A\$6,159) deposit, and in September 2015 this collection was broadened to 4,532 titles. Using this model, four PDF downloads or six chapter views triggers a purchase. 3,445 duplicating titles were removed from QUT's EBL profile.

A Cengage e-textbook pilot program was implemented via the Council of Australian University Librarians (CAUL) consortium using the EBL platform to make seven broadly used Australian texts available in e-book format for the first time in 2014 and 8 of 20 titles available in 2015. A trial of 21 Oxford University Press titles was also implemented in 2015.

In 2015 the Library implemented an e-textbook trial with Pearson and licensed 49 titles in semester 1 at a subscription cost of A\$18,100 and 46 titles in semester 2 at \$15,607.

Results

Elsevier EBS Compared to Collection Purchases (Figure 1)

The EBS model shows a high level of usage compared with the Elsevier collections, which have been owned since 2012 and especially compared with 1.72 uses per title across the entire QUT e-book collection in 2014. The EBS cost per use is higher than the collection purchase cost; however, the latter were available for a much longer time. It is to be expected that per title usage on older content would be lower than the more recent EBS titles.

Elsevier EBS Impact on EBL Costs (Figure 2)

As QUT implemented mediated PDA from June 11, the post-EBL expenditure is extrapolated based on the previous three months and estimated to have reduced by only US\$3,076. The extra cost of the EBS is therefore US\$76,539. Note that the EBL spend on the content the EBS replaced was only 11% of total EBL spend on Elsevier content and it was never expected that the EBS could eliminate all EBL expenditure. There are a number of variables affecting comparisons of EBL spend before and after the EBS, such as the increasing usage trend on EBL (for instance, there was a 13%

EBS March to August 2015 (1,155 titles)			Collection Purchases 2007–2012 Cumulative Use (1,142 titles)		
Total Use (Section/Chapter)	Cost Per Use	Use Per Title	Total Use (Section/Chapter)	Cost Per Use	Use Per Title
9,757	US\$4.07 / A\$5.42	8.29	45,508	A\$2.53	9.60

Figure 1. Elsevier EBS compared to collection purchases.

EBL Costs	STL	%	US\$	Auto-purchase	%	US\$	Total	%
Pre-EBS								
All Elsevier EBL Titles	2,017		\$72,612	230		\$58,901	\$131,513	
EBS EBL Titles	304	15	\$8,635	38	16	\$6,113	\$14,479	11
Post EBS Annual Projection							\$128,437	

Figure 2. Elsevier EBS impact on EBL costs.

increase in EBL transactions in 2014 over 2013 despite that for nine months of 2013, QUT exposed its full profile from 2006 for only three months of the year); higher STL and auto-purchase charges in 2015 compared to 2014; and that not all content on EBL was included in the EBS.

EBL Value of EBS Usage (Figure 3)

An alternative calculation estimates the EBL value of EBS usage as follows in Figure 3.

Based on just the first six months of usage, the effective value from the EBS would be: Total EBL usage value on suppressed titles US\$87,547 plus value of usage on additional content US\$22,208—cost of EBS US\$79,615 = US\$30,140.

EBL and EBS Cost Per Use and Titles Owned (Figure 4)

Again using the EBL value of EBS usage to calculate, the cost per use was lower for the EBS. Additionally, the cost per title owned was lower using EBS and more titles are owned for your money in EBS; however, more titles can be made available for access via EBL PDA without an upfront commitment.

EBS drove more usage via ScienceDirect than the equivalent content was previously used on EBL. EBS represents a cost-effective alternative to collection purchases. In terms of being an alternative to the EBL model, it is not a fair comparison. A more comprehensive EBS collection would be needed to fully evaluate the cost-effectiveness of the model and completely eliminate the EBL costs for Elsevier imprints.

Taylor & Francis EBS

During March to September 2015 the Taylor & Francis EBS selection resulted in 4,416 e-book section (chapter) uses, which extrapolated for 12 months at \$269,822 equals \$35.64 per usage, improving over time. Of the 7,765 titles, 27% were used during the six-month period.

Taylor & Francis EBS Impact on EBL Costs (Figure 5)

Projecting the three-month post EBL costs US\$225,197 to a full year of usage (US\$611,348 reduced to US\$562,992) and including the cost of the EBS (GBP136,577/A\$269,822), the extra cost is A\$205,348.

EBL Titles	Usage	% of Titles	Times Used	STL Cost Average US\$32.20	Auto-purchase Cost US\$	Total Cost US\$
379	6,554	23	4 or more	\$21,638	\$57,666	\$87,547
155	256	16	1 to 3	\$8,243		
590	0	61	STL Total	\$29,881		
Non-EBL Titles						
59	2,980	43	4 or more	\$5,700	\$15,189	\$22,209
25	41	18	1 to 3	\$1,320		
54	0	39	STL Total	\$7,020		

Figure 3. EBL value of EBS usage.

Elsevier	Cost/Title	No. Titles Owned	Cost Per Use
EBL PDA	US\$257 / \$343	340	US\$13.36 / A\$17.81
EBS	US\$211 / \$281	377	US\$4.07 / A\$5.40

Figure 4. EBL and EBS cost per use and titles owned.

EBL Costs	STL	US\$	Auto-purchase	US\$	Total US\$
Pre-EBS	9,706	\$270,945	1,527	\$340,403	\$611,348
Post-EBS	2,943	\$110,530	519	\$114,667	\$225,197
Annual Projection					\$562,992

Figure 5. Taylor & Francis EBS impact on EBL costs.

EBS did not sufficiently curtail the usage and cost of EBL; however, as stated above, there are a number of variables affecting comparisons of EBL spend before and after the EBS, including higher STL and auto-purchase charges in 2015 compared to 2014. To estimate the potential cost of EBL transactions had the EBS not been undertaken, the EBS usage is calculated in EBL terms.

EBL Value of EBS Usage (Figure 6)

Using just the EBL usage costs for the six month EBS evaluation period US\$178,797/A\$238,396 and subtracting the cost of the EBS, this is an extra cost of A\$31k. There were several issues affecting the EBS success, including mismatching between EBL and T&F eISBNs, which beset the suppression of T&F EBS content on EBL resulting in some content not being suppressed; the late supply of MARC records for a proportion of content; and a small proportion of titles having older copyright

dates. Although the uncalculated EBL value of the second half of the EBS usage period also needs to be considered, it appears that the EBS has not been as effective in curbing EBL expenditure as anticipated.

EBL and EBS Cost Per Use and Titles Owned (Figure 7)

Once again, the cost per use, cost per title owned, and number of titles owned favored the EBS. However, more titles can be made available for access via EBL PDA without an upfront commitment.

Wiley EBS

The 2015 Wiley EBS selection resulted in 23,385 e-book section (chapter) uses during the seven months from March to September 2015 (excludes 2,998 usages on titles already owned), which for

EBS Titles	Usage	% of Titles	Times Used	STL Cost Average US\$38.00	Auto-purchase Cost US\$	Total Cost US\$
233	1,723	3	4 or more	\$26,219	\$51,563	\$178,797
1,850	2,693	24	1 to 3	\$101,014		
5,682	0	73	STL Total	\$127,234		

Figure 6. EBL value of EBS usage.

Taylor & Francis	Cost / Title	No. Titles Owned	Cost Per Use
EBL PDA	US\$767 / A\$1,022	233	US\$40.48 / A\$53.98
EBS	GBP96.73 / A\$191	1,411	GBP18.03 / A\$35.64

Figure 7. EBL and EBS cost per use titles owned.

12 months extrapolated at US\$105,000 equals US\$2.61 per usage. Of the 16,665 titles, 71% were not used and of the 10,404 titles suppressed from EBL, and 84% were not used.

Wiley UBCM Impact on EBL Costs (Figure 8)

Projecting the three-month post UBCM EBL costs to a full year of usage (US\$164,469 reduced to US\$61,152) and including the cost of the EBS, the extra cost is US\$1,683.

In March 2015 Wiley introduced an embargo on STLs for current-year content and hence a proportion of these STL costs would no longer have been incurred for the current year publication dates. This is estimated at about US\$23k per annum in STL costs eliminated by the embargo. This is an advantage of the EBS in that the EBS provides access to the 2015 titles without embargo. However, factoring in the impact of the embargo, the cost difference is therefore higher than calculated above.

EBL Value of UBCM Usage (Figure 9)

Using just the first six months of usage, the effective value from the EBS would be: total EBL usage value on suppressed titles over six months US\$122,657 plus value of usage on additional non-EBL content US\$144,624—cost of EBS US\$105,000 = US\$162,281/A\$216,374.

Wiley advised after EBS commencement that 1,278 titles available via EBL were excluded from the UBCM. Matching analysis confirmed that 20% of the previous 12 months' STL transactions were for titles not included in the UBCM. The exclusion of textbook and premium content is one reason the EBS did not curtail the usage and cost of EBL to the extent the library was hoping. However, considering the EBL value of the EBS usage the EBS appears to be a cost-effective alternative.

EBL and EBS Cost Per Use and Titles Owned (Figure 10)

Once again, the cost per use, cost per title owned, and number of titles owned favored the EBS. However, more titles can be made available for access via EBL PDA without an upfront commitment.

JSTOR DDA

From March, 2015 through October 20, 2015, there were 17 e-books purchased for a total of \$782. There were a total of 538 chapter views and downloads for a cost-per-chapter view and download of \$1.45. The 538 chapter views and downloads were across 155 titles and this was across 34 publishers. When the corpus was increased from 140 titles to 4,532 titles, the average number of e-books accessed each month increased from 10 to 63 and the average downloads and chapter views increased from 45

Wiley	Cost / Title	No. Titles Owned	Cost Per Use
EBL PDA	US\$199 / A\$265	616	US\$12.61 / A\$16.82
EBS	US\$169 / A\$225	621	US\$2.61 / A\$3.48

Figure 8. Wiley UBCM impact on EBL costs.

EBL Titles	Usage	% of Titles	Times Used	STL Cost Average US\$20.80	Auto-Purchase Cost US\$	Total Cost US\$
616	8,188	6	4 or more	\$38,438	\$52,311	\$122,657
988	1,534	10	1 to 3	\$31,907		
8,457	0	84	STL Total	\$70,346		
Non-EBL Titles						
775	12,199	15	4 or more	\$48,360	\$65,813	\$144,624
912	1,464	18	1 to 3	\$30,451		
3,334	0	67	STL Total	\$78,811		

Figure 9. EBL value of UBCM usage.

EBL Costs	STL	US\$	Auto-purchase	US\$	Total USD
Pre-UBCM	4,035	\$90,795	654	\$73,674	\$164,469
Post-UBCM	519	\$9,093	216	\$15,368	\$24,461
Annual Projection					\$61,152

Figure 10. EBL and EBS cost per use and titles owned.

to 133 per month. The purchases per month did not change. QUT was projected to spend \$3,500 based on the titles selected, but to date has only spent \$782. QUT needs more time to assess the usage of the JSTOR DDA collection, and to assess any effect on the usage and cost of use of JSTOR titles in EBL.

E-Texts

The QUT usage of the seven Cengage 2014 e-texts was 298 in 2014 (Aug/Dec) and 955 YTD Oct 2015. Cost per use extrapolated for 2014 is US\$3.72/A\$5.31 and cumulative cost per use is very good at US\$1.43/A\$2.04. The usage of the 30 titles purchased in 2015 was 255 YTD Oct 2015 and extrapolated cost per use is US\$10.84/\$15.48, which will of course improve over time. Not all titles are set texts at QUT, which will affect the comparative usage rate of titles.

The QUT usage of the 21 Oxford e-texts during the six-month period March 30 to October 8, 2015 was 798 views of 20 titles, at US\$3,500, equating to US\$2.19/A\$3.12 per use, which is a comparatively good return on investment.

The QUT usage of the Pearson e-texts was 5,369 hits during the period of almost six months from April 22 to October 8, 2015, equating to A\$1.68 per use extrapolated over 12 months. Fifty-eight of the titles received hits and 43 titles received 10 hits or more and only 12 titles received five hits or less. Although the Library licensed 49 titles in semester 1 at a cost of A\$18,100 and 46 titles in semester 2 at \$15,607, only nine of the semester 2 titles were made available, and as these were not invoiced they have been excluded from the cost per use the calculation.

QUT's EBL usage of e-textbook titles was not affected as the e-text pilots did not include titles

previously available via EBL. Pearson has since provided a new pricing structure and service guarantee which will make the e-text model more attractive to libraries.

Conclusion

EBS can be effectively used by libraries to provide access to collections of e-books at a predetermined cost, resulting in the selection of best-used titles for perpetual access. For all EBS publisher collections used at QUT, the usage of e-books will be sufficient to create a selection list for perpetual access; however, for all publishers involved, a smaller pool of titles was available via EBS than from EBL PDA. EBS is not a replacement for EBL PDA when considering it provides only a subset of titles for procurement via the EBS model.

The EBS e-book business model has the advantages of providing budget certainty to libraries; libraries can select the up-front financial commitment they can afford; patrons can choose from a wide choice of titles; usage data is used for selection (DDA); only titles that are used are purchased; dollars are spent on procuring used titles in perpetuity; current-year embargoes can be avoided; there are no STL costs; and the library ends up owning a greater number of titles as a result of the up-front investment. The EBS cost per book is lower than the EBL PDA cost per book. This is an important factor for the libraries which value the collection development approach over the access approach. However, calculations of the EBS usage on suppressed EBL content indicates that the actual impact of the EBS was much more effective than indicated by before and after EBL expenditure comparisons in isolation. There are many other factors to consider, such as changes in content, pricing, and demand.

Disadvantages include: publishers may limit access to a ratio of titles per spend; fewer titles are made available to users; libraries may be required to preselect a pool of titles to be selected by patrons; it is complicated and high workload to manage and provide; EBS titles need to be deduped against other access packages in order to prevent double purchasing; not many publishers provide EBS; and finally, many titles in the EBS collections were not used at all during the access period. Where publishers had restricted the size of the EBS collection, EBS did not have as much effect as anticipated in reducing the demand for and cost of publisher titles via EBL. The QUT EBS pilots highlighted the importance of publishers providing comprehensive and accurate information, including correct details of EBS content and comprehensive supply of MARC records. It also highlighted that libraries need to take care with matching of eISBNs to facilitate deduplication. We don't yet know if the model will

increase in prevalence or if it is a passing phase in publishing.

The Cengage and Oxford e-textbook pilots have successfully provided access to a range of e-texts at an affordable price. The Pearson e-text pilot was successfully implemented in semester 1, 2015 with good cost per use.

Looking to the future, QUT Library is planning to continue to use EBL PDA, JSTOR DDA, and some publisher EBS models. It would be helpful to QUT if publishers facilitated EBS hosting on EBL (ProQuest e-book Central) in 2016, as this would eliminate the very substantial workload associated with deduplication across multiple e-book platforms due to platforms using different eISBNs.

QUT will continue with the Cengage and Oxford e-Text pilots and will also continue with the Pearson e-Text pilot as they are providing good value.

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