PRINT BOOKS AND EBOOKS: THE NEW EQUILIBRIUM IN AN ACADEMIC LIBRARY

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This article looks back at ALIA's prediction from 2013 that 'library print and ebook collections will establish a 50:50 equilibrium by 2020 and that this balance will be maintained for the foreseeable future' in the light of the experience at Curtin University Library. It revisits the findings of an article on the same topic published in 2015, and documents the situation at Curtin Library as at 2022. It describes changes in the ebook environment and user attitudes over the past 6 years, as well as developments in the Library's acquisition strategies and methods to increase ebook holdings, and the current state of the collection. The article finally provides a likely projection of the ebook and print book holdings situation at Curtin Library in 2050.

Keywords: ebooks; collection development; library spaces; academic libraries

Introduction

In 2015 we published an article (Wells & Sallenbach, 2015) which set out to test the prediction made

by the Australian Library and Information Association that 'library print and ebook collections will

establish a 50:50 equilibrium by 2020 and that this balance will be maintained for the foreseeable

future' (Australian Library & Information Association, 2013), against the likely outcome at Curtin

University Library in view of the monographs collection development strategies then in place.

Given that by the end of 2014 nearly 37% of the library's owned or subscribed book collection was

already electronic we concluded that for Curtin the figure of 50% was likely to be significantly

surpassed by 2020 and that the proportion of ebooks was likely to continue to grow steadily beyond

that point. Looking ahead, we envisaged that by 2050 the book collection would be 80% or 90%

electronic.

The current article revisits our findings from 2015 in the light of changes in the acquisitions

environment and in Curtin University Library practice over the last six years, to document the print

book-ebook equilibrium as at 2022, and to review our projection of the likely situation in 2050.

Changing environment and user attitudes

Since 2015, the ebook environment across the higher education sector has changed both with the development of new acquisition models, and in terms of the increase in available titles, the development of platforms to improve ebook functionality and the familiarity of users with ebook resources. The enthusiastic adoption of ebooks by academic libraries beginning two decades ago (Raynard, 2017; Shelburne, 2009; Vasileiou et al., 2012) and the attendant push of users to adapt to the new format did not come without challenges, and some of these still remain today (Blummer & Kenton, 2020). Many studies on ebook usage have been conducted in recent years, and they reveal that although ebooks have become an accepted medium in higher education study and research, they do not at present always fully meet patron needs (Alhammad & Ku, 2019; Blummer & Kenton, 2020; Casselden & Pears, 2020; Johnston & Ferguson, 2020; Johnston & Salaz, 2019; Tracy, 2018; Wilson et al., 2021; Yuan et al., 2018).

The main benefits of ebooks to users are still their convenience and accessibility, their 24-hour availability, the fact that they can be keyboard searched and are portable. Ebooks also facilitate study for distance and part-time learners and have been crucial in ensuring that study and research could proceed in the situation of reduced physical access to libraries during the recent COVID pandemic. An increase in environmental awareness has also led some users to opt for ebooks over print books, in an effort to use environmentally sound products (Hsu et al., 2017). These factors are significant advantages that have led to user acceptance – and preference in some cases – and continue to contribute to ebook adoption. On the other hand, the drawbacks of ebooks which have been identified over the years remain, notably difficulties in navigating and using numerous different vendor and publisher platforms, Digital Rights Management (DRM) imposed on titles that restricts access and interaction with them (Tracy, 2018), and physical issues such as eyestrain and reading fatigue (Johnston & Salaz, 2019). Another major inhibitor of the uptake of ebooks is the fact that some titles are not available in an electronic format, or publishers only make them available for individual purchase and not for institutions. Further, some readers form emotional attachments to

print books (Myrberg, 2017), and miss the enjoyment of in-person visits to the library, and the serendipitous searching of bookshelves (Casselden & Pears, 2020; Martin & Quan-Haase, 2013), which is not possible in an online environment in a way that produces the same affective response. It has also been suggested that the presence of physical books in libraries creates an environment that is in itself conducive to study and reflection (Donovan, 2020).

Increased familiarity with ebooks has, however, helped users to deal with these negative factors, as they have grown accustomed to being adaptive and utilizing ebooks for tasks and in ways that specifically suit them and their purposes. What has become clear is that ebooks are used differently from print books (Horner, 2017), and that often they are used together to complement one another (Yuan et al., 2018). Ebooks are better for some tasks and print books for others. For instance, users may value ebooks for their full-text searching and copy and paste functions, but value print books for easier annotation and the ability to use them together with other documents (Tracy, 2018). Some users prefer ebooks when completing course work and conducting targeted research (Wilson et al., 2021), but will revert to print for more in-depth learning, better information retention or when reading complex or lengthy texts (Baron et al., 2017; Mizrachi et al., 2018). The format of material assigned by instructors also influences how students complete class readings, and inevitably if a print copy is already on loan, its ebook equivalent will be used instead (Tracy, 2018). The field of study still seems to impact format preference, with print continuing to be used extensively in the humanities (perhaps because less relevant material is available electronically and because of the importance of textual details and structures, and the fact that humanities scholars simply read more than scientists and find print a more suitable format for their reading needs (Wilders, 2017)), while users in the sciences are comfortable with ebooks (also being more accustomed to reading online journal articles) (Fry, 2020; Wilson et al., 2021; Yuan et al., 2018). Student study level also remains a consideration affecting choice or preference of book format. Research has identified foundation students depending more on ebooks, undergraduates displaying a more balanced approach to using ebooks and print books, and doctoral students being more

reliant on print books for their studies (Casselden & Pears, 2020). These factors all point towards the effectiveness of a hybrid approach to using ebooks and print books selectively, and the fact that library users have become strategic about when and how they use them (Tracy, 2020). Ultimately, however, users will accept the format that is available to them in order to achieve what is required and to fulfil their learning, teaching and research needs, even though it may not be their first or preferred choice (Tracy, 2020).

For libraries, the ability to provide electronic access to resources at all times both in-house and remotely is an undisputed advantage. The value of ebooks became even more evident during the COVID pandemic which began in 2020 and required urgent action by libraries to ensure that students and staff could continue with their work by minimizing the effects of closed library buildings. Ebooks undeniably gained popularity during the lockdown periods, and their flexibility and convenience permitted scholarly activities to proceed (Harnegie, 2021) when physical libraries were closed (Malaquias et al., 2021). During pandemic conditions, ebooks were no longer a simple useful alternative to print books, but became a necessity with entire campuses studying and researching remotely (Brine & Knight, 2021). This mandatory context left individuals with little option but to use ebooks, also forcing those with a preference for print to adopt the online format.

In addition to accessibility, another significant benefit of ebooks for libraries is the ability to make many more available. The number of titles within ebook publisher and aggregator packages surpasses what would be possible to store on physical shelves, and as a result much more material can be offered to users. Business models such as Demand Driven Acquisition (DDA) and Evidence Based Acquisition (EBA) as described below also increase the number of ebook titles which can be made available. Ebooks have contributed solutions to library space concerns, and the need for more library space for a variety of reasons has not gone unnoticed by vendors, who have been heavily promoting print to electronic conversion discounts, further increasing ebook expenditure and holdings. There are limits, however, to ebook availability as noted above, and there is a definite lack of ebooks for some research areas (Wilders, 2017). Where ebooks are available only to individuals

and not to institutions libraries may be obliged to acquire multiple hard copies of texts that are actually born-digital (Casselden & Pears, 2020). This is most often the case with textbooks, which remain a significant income stream for publishers.

Increasing the Number of Ebooks

Over the last few years Curtin University Library has taken several steps designed to increase the number of ebooks in the collection, both at a policy and a practical level. While recognizing that ebook technology as it currently exists has shortcomings and does not always satisfy user expectations, we have taken the strategic view that these factors are outweighed by the advantages of ebook accessibility and the ability of the Library to provide much richer collections electronically than it could in print. We anticipate that ebook functionality will continue to improve, and will, moreover, increasingly offer possibilities for the application of modern computational research tools such as data mining.

This broad premise appears to have been borne out by our experience of the COVID-19 crisis of 2020-2021. At Curtin ebooks have always been well used, but a marked increase in usage was noted in 2020 over 2019 (Council of Australian University Librarians (CAUL) Statistics, 2016-2021). In 2019, COUNTER ebook section uses totalled 3,578,108, whereas in 2020 this figure rose to 3,835,163. (It must be noted, however, that although greater use of ebooks was experienced, the new COUNTER Code of Practice (Release 5) introduced in 2020 also contributed to the usage increase between 2019 and 2020, as the way ebook usage was counted changed.) Western Australia did not experience as many COVID-related lockdowns or such lengthy lockdowns as the rest of Australia and other countries around the world, and as a result in 2021 conditions were relatively normal as regards the ability of students to attend campus and access physical material in the library. However, at 3,850,238 section uses ebook activity in 2021 remained elevated at approximately 2020 levels, which suggests that adjustments in learning and teaching introduced in the context of lockdowns have encouraged the usage of ebooks beyond the period in which they

were strictly necessary. Expenditure on ebooks has been higher than on print books at Curtin for many years now, but there was a noticeable increase in ebook expenditure over 2019 in 2020 and 2021 coinciding with the pandemic (CAUL, see Table 3 below). Although the trajectory of Curtin Library's holdings was already set to surpass the ebook to print book equilibrium predicted by the Australian Library and Information Association, the impact of the pandemic and the lockdowns can be considered as a contributing factor towards the extent of this outcome.

The revised version of the Library's 'Collection Principles', issued in March 2021 (Curtin University Library, 2021), adopted the term 'digital by default' to signal an increased focus on ebook acquisition rather than print to 'maximise resource availability and best meet the diversity of our client groups wherever they are located'. New physical items are no longer purchased if an electronic equivalent is available, except in very limited circumstances: for example, if items are required for special collections, or if the electronic version does not reproduce critical features such as high resolution graphics available in the print. In tandem with this change the online client recommendation form was amended to remove the option to specifically request print, and we also discontinued the practice of routinely purchasing both print and electronic formats of essential student readings. Inter-library loan requests are filled by acquiring ebooks for the collection when practicable. Alongside individual title purchasing Curtin systematically acquires publisher collections of ebooks as funds allow, and also provides access to a large number of ebooks through subscription services, notably ProQuest's Academic Complete.

Additionally, the Library uses several strategies to automate acquisitions in response to client demand. We have had a demand driven acquisition (DDA) program in place since 2011, to achieve more targeted acquisitions of electronic books via client selection rather than via Library staff selection. Records for selected titles are made visible to clients, but only purchased if they are used (Carrico et al., 2016). Over the years the profile and acquisition options have been reviewed and adapted to support current collection development strategies. For example, while the Library originally made use of short-term loans, by which for a proportion of the purchase price the titles

was made available for a fixed period of time only, in 2017 the decision was made to purchase

triggered titles outright immediately on first use, in response to many publishers increasing the costs

of short-term loans. This change significantly impacted on the number of titles purchased via DDA

and owned (rather than loaned), which increased from approximately 160 items per year to over

700. We now specifically rely on the DDA for client selection and acquisition of current (frontlist)

material, which results in the acquisition of approximately 700 titles per year. DDA has proven to be

a very effective selection and purchasing tool since its implementation, and has played a key role in

steadily increasing our ebook collection and its use. We will keep tailoring the profile in future as

required, to adjust to changing budgetary situations and strategies.

Also part of our purchasing repertoire is the evidence-based acquisition (EBA) model

whereby the Library pays a fixed sum to allow access to a publisher's ebook collection for a set

period, at the end of which the Library selects content to own permanently to the value of the

amount paid (Carrico et al., 2016). We first investigated and considered the evidence-based

acquisition model some years ago. However, the complexities around it, particularly while the

model was still in its infancy, originally deterred us from adopting it. These included the high

workload required to pre-select a pool of titles, the question of how to handle de-duplication against

titles already in the collection, the uncertainty of whether titles in the pool would be used and the

quality of the metrics provided to make selection decisions at the end of the access period (Borchert

& Cleary, 2015; Robbeloth et al., 2017; Spratt et al., 2017; Tran & Guo, 2021). Not least, the difficulty

of having to commit a large sum of money up-front and how to deal with it in terms of shrinking

budgets has also always been a significant challenge.

However, after many years of running a demand driven acquisition (DDA) program where

exact costs are unpredictable and uncertain, the benefit of a known, fixed expenditure from the

onset, the advantage of user participation in the selection process via usage statistics, and the

increased importance of a suitable ebook collection in pandemic times, led the Library to pilot EBA

programs with Springer and Taylor & Francis in 2021 and 2022. The risk of experimenting with EBA

with these two publishers was deemed low, as historically usage on Springer and Taylor & Francis titles has always been high and consistent, the subject collections and individual titles to include in the pool were relevant and large, and the content was DRM free. We had historically bought large numbers of Taylor & Francis titles on an individual basis and EBA was also effectively a way of automating this work at relatively little extra cost. As with other libraries trialling EBAs (Elliott & Hazen, 2020; Hart et al., 2022; Tran & Guo, 2021; Yılmaz & Ünal, 2022), our main challenges were the initial set-up and discovery, particularly for Taylor & Francis, which involved individual title selection for the content pool, and the time required for title selection at the end of the access period.

The outcome at the end of the first year of the agreements resulted in 592 titles acquired for Springer, and 831 for Taylor & Francis. The usage for EBA titles that was relied on to make the selection and purchasing decisions was very good (particularly for Springer), and higher than usage for titles acquired via DDA, which in some cases are only ever used once. We have therefore found EBA to be an effective acquisition method for ebooks and increasing our ebook collection, and after evaluating the second year of the agreements at the end of 2022, we will consider extending the programs further (this will also be dependent on available funds).

With the adoption of a 'digital by default' collection development strategy in 2021 the Library also undertook some specific targeted activities to increase the availability of books in electronic format. The student experience is a key aspect of Curtin University's 2030 Strategic Plan (Curtin University, 2022), and one way the Library is responding to this priority is by focusing on the availability and accessibility of learning and teaching resources such as textbooks. In 2021 and 2022, the Library engaged ProQuest to conduct a 'Title Matching Fast' (TMF) analysis to identify print holdings in the Library's collection linked to student reading lists through the Alma library system's course reserves module and the Leganto reading list system, and to check their availability on ProQuest's EBook Central platform or through other publishers included in the Rialto marketplace within Alma. This exercise was based on reading list material from 2020 to 2022, and as a result 315

print titles (corresponding to 528 reading list citations) were upgraded to electronic versions. The TMF analyses have proven to be useful and are highly beneficial for students in improving the accessibility of textbooks they are set by instructors. We envisage they will form part of our established processes for identifying and acquiring electronic books for the foreseeable future. We have also experimented with using TMF to purchase electronic equivalents of items held only in print even when these are not linked to student reading lists. However, the return on investment in applying the process to items that are not immediately required is low. As an alternative we are currently exploring the option of setting such items up as a DDA pool so that the ebook versions would be provided on request if and when they were actually needed.

Decreasing the Number of Print Books

Alongside work to increase the number of ebooks in the collection, the Library has also actively taken steps to reduce the number of physical books held. All libraries carry out collection maintenance activities, but a particular focus on the continuing value of the physical collection was brought to bear through the opportunity which arose to embark on a major refurbishment of the T.L. Robertson Library on Curtin University's Bentley campus. (The Library building is due to reopen following a multi-year building project for Semester One 2023.) One major consideration in this project was to maximise the amount of space in the building available for student study, and one of the strategies to achieve this was to minimize the footprint occupied by the physical collection. In pursuing this aim two additional related considerations were also taken into account by Library planners. First, the volume of loans from the physical collection had been falling over several years, reflecting the increased acceptance of electronic books by Library clients (See Table 1).

[Table 1 near here]

The number of loans recorded in 2021 was just over 14% of the total for 2016. While this can be partly explained by the impact of COVID and by restrictions on access to the physical collection during the building renovations, the start of the decline clearly predates both of these phenomena, and suggests that Library clients are relying significantly more on electronic monographs than on print. Secondly, and in light of the reduction in loans, it made sense to apply the logic of our 'e-preferred' and later 'digital by default' acquisitions strategy retrospectively to the existing collection – e.g. if under the current strategy we would not have purchased a physical copy of a book we would not now retain a physical copy if we were also offering electronic access.

Accordingly, several different actions were put in place to reduce the footprint of the T.L. Robertson Library collection. For the most part the collection has been rehoused in high density compactus shelving, reflecting anticipated relatively low use, though we are maintaining a small 'high demand' collection on standard shelving. In order to ensure that the collection continues to address the needs of Curtin students and academic staff we also undertook a comprehensive review of physical holdings. The Curtin University Library collection had developed from predecessor organisations which had largely been teaching-focussed rather than research intensive (White, 1996), and analysis revealed large volumes of redundant works no longer suitable for modern curricula. While we were conscious of the need to retain items of ongoing academic value, over a five-year period we were able to reduce the print book collection by almost 200,000 older items with little or no recent usage, mostly superseded reference or teaching materials, non-academic works, and duplicate copies or titles which we also hold electronically. Several hundred pre-1930 publications and special collection items have been transferred to archival climate-controlled stacks at the John Curtin Prime Ministerial Library. The print collection is likely to continue to shrink over the next few years, although at a slower rate, as we buy increasingly few new items in print, further titles are replaced by electronic equivalents and remaining print textbooks become obsolete and can be discarded. What remains can be largely expected to become a low-use, high-value research collection.

Outcomes and Projections

The impact of the strategies outlined above both to increase the number of ebooks and to decrease the number of physical volumes has had a significant impact on the Curtin collection (see Table 2). At the end of 2016 the ratio was 218,490 electronic books to 470,116 physical books, or 32% electronic and 68% physical. (The percentage of ebooks in 2016 was slightly less than the 37% reported for 2014 because owing to financial pressure the Library's subscription to Academic Complete was not maintained in 2016 and 2017.) By the end of 2021 we had access to 731,300 electronic books as against 284,656 physical books, or 72% electronic to 28% physical. The tipping point of 50:50 was reached in 2018. (The figures given here for electronic books represent titles to which Curtin clients had access, not just to owned items, and represent the number of active electronic monograph portfolios in the Alma library system at the end of each year.) A significant boost was given to ebook holdings in 2018 by our decision to resubscribe to Academic Complete. A further large boost was provided by entering into EBA arrangements with two major publishers in 2021. It remains an open question whether this level of EBA activity is financially sustainable in the longer term. Even if it is not, however, the EBA activity will still have contributed to a notable increase in the number of owned titles, and the proportion of ebooks will remain significantly above 50%.

[Table 2 near here]

This conclusion is reflected in the pattern seen in the relative expenditure on electronic and physical books over the last five years (see Table 3). Expenditure on electronic books has steadily increased from $1,341,613 in 2016 to $2,201,006 in 2021. The expenditure on physical items has dropped from $225,079 in 2016 to $55,620 in 2021. The percentage of the book expenditure given to print has dropped from 14% in 2016 to just 2.5% in 2021.

[Table 3 near here]

From the above discussion, despite the shortcomings and challenges that still exist for both users and libraries in regard to ebook adoption and usage, the upward acquisition trend has been set for some time and will continue on the same trajectory. However, print books will keep playing an active if increasingly subsidiary role in study and research, and complementary deployment of the two formats together is likely to be necessary to ensure access to the widest possible range of sources. Further developments and improvements will undoubtedly continue to be worked on to increase usability of ebooks: for example ebook vendors and providers will address the current failure of ebook technology to facilitate full engagement with the content, issues related to the requirement of multiple logins for access, or clunky online readers or reading tools (Casselden & Pears, 2020). Likewise, new business models will no doubt appear that will challenge current acquisition practices and provide more options for libraries to change or adjust current e-purchasing strategies. While at present only a small number of books are published electronically in open access the volume is likely to increase quite rapidly once open access publishing for journal articles has become mainstream, further increasing ebook availability and uptake. In the textbook market the long run competition from Open Education Resources will force publishers to relax or abandon DRM, which for some publishers (e.g. Cengage, Wiley and Oxford University Press) has recently become stricter rather than more lenient. Finally, information literacy continues to have an important role in helping users utilize ebooks to their full potential (Wilson et al., 2021). Looking ahead to 2050, our estimate of a book collection which was 80% or 90% electronic now seems conservative – a figure of 90% or higher appears more probable.

Implications for professional practice

- While physical books will continue to play a role in research collections for the foreseeable future, for libraries ebooks have distinct advantages in terms of availability, accessibility and space management.

- The requirement for flexible electronic access to information resources will continue in the future, not only due to changes in teaching, learning and research, but also due to unforeseeable and uncontrollable events.

- In building ebook collections it is most effective to consider a range of collection development strategies – subscription, package purchases, DDA, EBA as well as title-by-title acquisition.

- There is a role for libraries in maintaining a dialogue with publishers, vendors and ebook providers to drive improvements to the accessibility and usability of ebooks, and to find alternatives to restrictive DRM.

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List of Tables

Table 1. Loans of Physical Items 2016-2021. Source: CAUL statistics.

Table 2. Physical and Electronic Book Titles 2016-2021. Source: 2018-2021 CAUL statistics, 2016-2017 Curtin University Library internal statistics.

Table 3. Expenditure on Electronic and Physical Books 2016-2021. Source: CAUL statistics.

Note: figures for 2016 and 2017 include a small amount of expenditure on monographic audiovisual material.

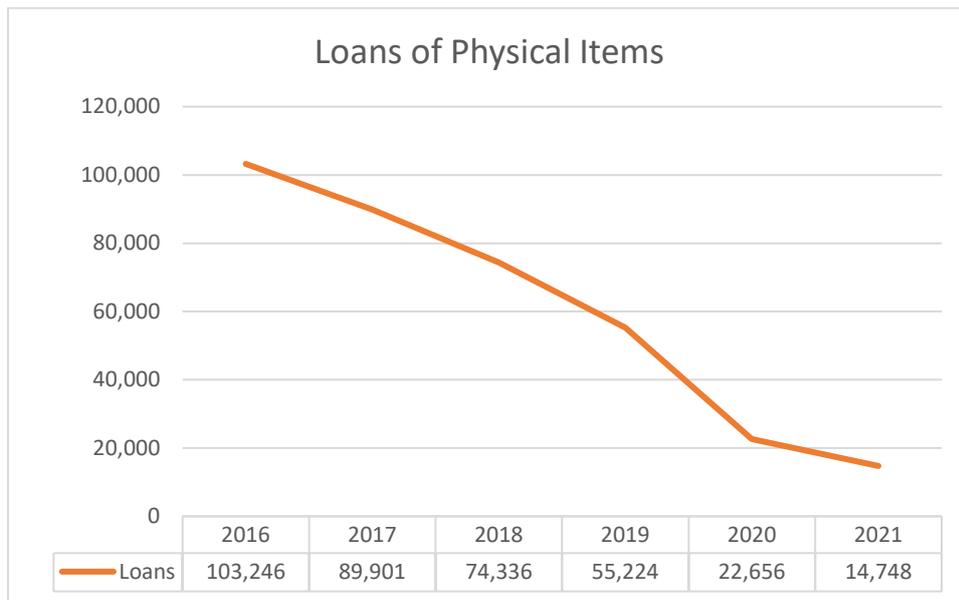Table 1. Loans of Physical Items 2016-2021. Source: CAUL statistics.

Loans of Physical Items

	2016	2017	2018	2019	2020	2021
Loans	103,246	89,901	74,336	55,224	22,656	14,748

Table 2. Physical and Electronic Book Titles 2016-2021. Source: 2018-2021 CAUL statistics,

2016-2017 Curtin University Library internal statistics.

Title Holdings

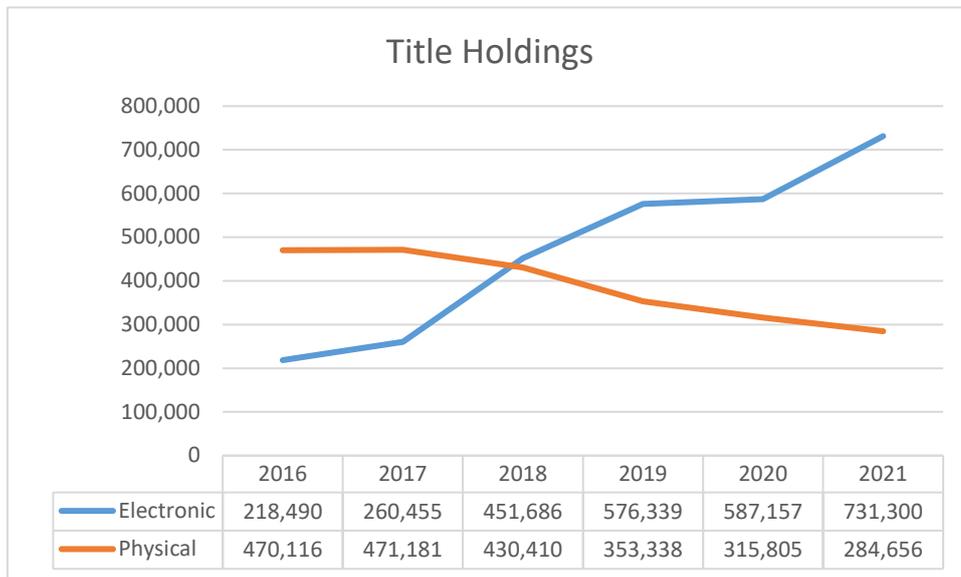|	2016	2017	2018	2019	2020	2021
Electronic	218,490	260,455	451,686	576,339	587,157	731,300
Physical	470,116	471,181	430,410	353,338	315,805	284,656

Table 3. Expenditure on Electronic and Physical Books 2016-2021. Source: CAUL statistics.

Note: figures for 2016 and 2017 include a small amount of expenditure on monographic audiovisual

material.

Expenditure (AUD)

	2016	2017	2018	2019	2020	2021
Electronic	1,341,613	1,605,558	1,410,633	1,369,449	1,793,474	2,201,006
Physical	225,079	177,009	173,063	111,835	54,291	55,620