Digitizing Archival Records: Benefits and Challenges for a Large Professional Accounting Association



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RÉSUMÉ *CPA Australia*, dont les origines remontent à 1886, demeure une des sociétés professionnelles de comptables les plus importantes au monde. À l'image de sa longue histoire et de son influence très étendue, l'organisation détient des archives considérables et diverses qui font preuve à la fois de son développement et de l'évolution générale de la comptabilité et des pratiques d'affaires. Cet article présente une étude de cas d'un projet pour numériser certains aspects de ces archives. Fondé sur des perspectives sur la gestion des archives à l'ère numérique, on y présente les avantages et les défis de la numérisation. Un avantage clé est de permettre l'accès aux images numériques tout en préservant des documents d'archives originaux rares et fragiles. Cependant, des défis ont surgi lorsqu'il fut question de déterminer quels documents numériser en priorité, d'où la nécessité de développer un modèle qui a pris la forme d'une matrice décisionnelle. L'étude de cas de la *CPA Australia* intéressera d'autres organisations qui cherchent à se servir de la numérisation comme moyen de surmonter le dilemme lié à la question de donner accès au matériel archivistique tout en assurant sa préservation.

ABSTRACT With antecedents extending to 1886, CPA Australia is one of the world's most significant professional accounting associations. Reflective of its long history and widespread influence, the organization holds an extensive and diverse archive that evidences both its own development and the general evolution of accounting and business practices. This article presents a case study of a project to digitize selected aspects of this archive. Informed by perspectives on managing archives in the digital era, the benefits and challenges of digitization are presented. A key benefit was enabling access to digital images while preserving rare and fragile original records and documents. However, challenges arose in prioritizing the items for digitization, and this necessitated the development of a model, taking the form of a decision matrix. The CPA Australia case study will be informative for other organizations seeking to use digitization as a means to overcome the dilemma associated with providing access to archival materials while also ensuring their preservation.

1 The authors are grateful to the anonymous *Archivaria* reviewers and to the participants at the 2013 Symposium of the Accounting History Special Interest Group of the Accounting and Finance Association of Australia and New Zealand, held in Perth, Australia, for their helpful comments on an earlier draft of this article.

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Introduction

The spread of digital technologies, particularly in the past two decades, has been revolutionizing records management generally and archival processes and approaches in particular. As these technologies increasingly offer more effective means for preserving, recreating, and providing access to diverse archival records, they are also gaining broader acceptance among the archives management community.² There are, however, a number of challenges for archivists to address if such technologies are to deliver all of their expected benefits.³ In this study, we explore these challenges as they relate to a prominent professional accounting association: CPA Australia. With more than 150,000 members spread across 120 countries and with origins reaching back to 1886, this organization is significant in size, history, and influence, and these circumstances are reflected in its extensive archive.⁴

A key feature of many digitization projects initiated in recent years has been their tendency to be administered by government-funded agencies. In contrast, records held by business entities and professional associations have generally not been a focus of the digitization drive.⁵ However, the archives of such organizations often constitute repositories that are of public and historical significance. In the case of business entities, this significance derives from their diverse and influential roles as employers, suppliers, consumers, taxpayers, and drivers of economic activity. Regarding professional associations, these organizations have the unusual status of being private entities that explicitly justify their existence in terms of exerting an ethical and regulatory influence within their specialist jurisdiction.⁶ That is, they are private organizations with a state-endowed warrant for public influence as they control admission to particular occupations and regulate the practice of those occupations.

While the adoption of technology in the management of archival resources⁷ continues to yield benefits, it also presents some new challenges. Digitization

5 There are some important exceptions, such as the Institute of Chartered Accountants in England and Wales (ICAEW), which has compiled an extensive digital catalogue with links to related repositories.

² Christopher A. Lee and Helen Tibbo, "Where's the Archivist in Digital Curation? Exploring the Possibilities through a Matrix of Knowledge and Skills," *Archivaria* 72 (Fall 2011): 123–68; Geoffrey Yeo, "Bringing Things Together: Aggregate Records in a Digital Age," *Archivaria* 74 (Fall 2012): 43–91.

³ Lilly Koltun, "The Promise and Threat of Digital Options in an Archival Age," *Archivaria* 47 (Spring 1999): 114–35.

⁴ CPA Australia, Innovating Today, Influencing Tomorrow: CPA Australia 2014 Integrated Report (Melbourne: CPA Australia, 2014), 12, accessed 29 January 2016, http:// cpaaustraliaannualreport.realviewdigital.com/?iid=115043#folio=OFC.

⁶ See, for example, Keith M. Macdonald, *The Sociology of the Professions* (London: Sage Publications, 1995).

⁷ In the context of this study, the term *management* is used to encompass all aspects of the preservation and management of the archive records.

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adds another layer to the already inherent complexity associated with managing a physical archive; this is made evident in the case study of CPA Australia. Just as it is rarely feasible to retain every physical record generated by an organization in the course of its operations, it will be equally rare to digitize every record in a collection. Retention and disposal policies are therefore required and the selection of items for digitization becomes a key variable in shaping the accessibility of the existing archival collection. The challenges of developing approaches and protocols, or amending existing ones, in order to utilize new technology effectively are significant.

A second issue relates to the complexity of the digitization process itself, with matters of cataloguing and technology management having to be carefully considered before digitizing commences. Once created, digital records then need to be managed as carefully as other archival documents to ensure that the value and provenance of the resources are not compromised.

Although there are private and public benefits to be gained from preserving business archives and improving accessibility to them, there has been little commitment to digitization on the scale that has occurred for publicly funded repositories.⁸ As a result, the issues associated with digitization in this area have not been as clearly articulated or understood as they are in the wider archival arena. This lack provides the primary motivation for the present study. A case study analysis of an Australian professional association of international significance is used as a means to investigate and illustrate issues associated with the use of digital technology. A key aim of the project was to develop a system for selecting items for digitization from the CPA Australia archives, with the intention of improving access to important records while also aiding their preservation.⁹

While primarily a membership-based professional organization, the remit of CPA Australia encompasses an advocacy dimension, including working with governments, regulators, organizations, academe, and the general public to represent the views of members and influence relevant public policy debates.¹⁰ Given this complex societal interplay, CPA Australia is an entity that has both shaped and been shaped by economic, regulatory, and social changes

⁸ For example, in the United Kingdom, it is estimated that from 1990 to 2005 more than £130 million of public money was spent on creating digital content. See Barbara Bültmann, Rachel Hardy, Adrienne Muir, and Clara Wictor, Digitised Content in the UK Research Libraries and Archives Sector: A Report to the Consortium of Research Libraries and the Joint Information Systems Committee (London: CURL and JISC, 2005), accessed 31 January 2016, http://www.rluk.ac.uk/wp-content/uploads/2014/02/Loughborough_Digitization _Report.pdf.
9 The project team comprises researchers from the Australian National University, Deakin

⁹ The project team comprises researchers from the Australian National University, Deakin University, Federation University Australia, and the University of Melbourne. The National Archives of Australia is also a partner in the project.

¹⁰ For more information, see CPA Australia, "About Us," http://www.cpaaustralia.com.au/ about-us.

over time. As well as having a self-interest motive to preserve its history, the organization has a public-interest obligation to preserve evidence of its dynamic social role.

The primary contribution of this study is to shed some light on issues pertaining to managing and preserving business archives through the use of digital technology. The results have the potential to inform understanding of the benefits and challenges encountered by similar membership-based organizations in digitizing aspects of their archives.

The next section provides a review of the issues involved in relation to the digitization of archival resources. The section thereafter outlines the background to the CPA Australia archives project and the digitization processes undertaken. This is followed by the presentation and discussion of the findings of the case study. The final section presents concluding comments and suggestions for further research.

Background

Recent digitization projects point to a host of new possibilities but also new challenges for the archivist in the management of archival resources. Three central matters underpin the ongoing debate in the digital age. These are (i) appraisal; (ii) approach to management; and (iii) access.¹¹

Appraisal

Appraisal is one of the most significant tasks undertaken by the archivist and has prompted much debate over a considerable period of time.¹² The issue of digitization itself raises questions very similar to those of the appraisal of conventional archives. Essentially, the appraisal method adopted must provide the solution to two fundamental questions: What should be digitized and why should it be digitized? There are rarely any ready-made answers to these questions as, by their very nature, archival materials tend to have unique characteristics. Instead, a number of issues are raised about each archive's purpose, its users, and the implications of appraisal decisions. In terms of the current case study, the approach taken drew on the knowledge base of archival theory and the experience of appraisal methods applied in conventional archive collections to build a decision matrix, which was then applied to the records held by CPA Australia.

Luciana Duranti, "The Impact of Digital Technology on Archival Science," Archival Science 1 (March 2001): 39–55.

¹² Kate Cumming and Anne Picot, "Reinventing Appraisal," *Archives and Manuscripts* 42, no. 2 (May 2014): 133–45.

Traditional appraisal methods owe much to the work of T.R. Schellenberg, one of the first to theorize the role of the appraisal process.¹³ Schellenberg's contribution was to distinguish between the primary value and secondary value of modern archives. Primary value relates to the usefulness of the archive to the original creators of the records, while secondary value refers to its extended use by other interested parties.¹⁴ The approach implies a "bottom-up" methodology, from which the basis of microappraisal techniques evolved. Microappraisal focuses on an assessment of the merits of particular sets of documents, determining their value against a set of criteria. Schellenberg's approach has been criticized on a number of fronts, not the least because of its generality. However, his theory has provided the foundation upon which later appraisal approaches have been developed. It is a useful starting point for the current study.

During the 1980s, the quest to find a rigorous and enduring appraisal methodology gained momentum with a number of new approaches being advocated. In Canada, Terry Cook put forward the argument for a macroappraisal approach that shifted the focus of the archivist to the functional context in which the record was created. This implied a top-down approach that encouraged a wider appraisal of the organization that created the records, the circumstances that caused the records to be created, and how and where this process occurred.¹⁵ The elements of the macroappraisal model provide an important reminder to consider the wider functional contexts in which the records are located.

Approaches to Management

One of the most profound impacts of digital technology has been to challenge the existing frameworks of thinking about records and archives.¹⁶ A key issue that needed to be considered in this case study was the development of an approach to management of archival resources that would allow the integration of the CPA Australia archives with other digital collections.

The traditional basis of archives management has resided with the preservation of the structure of a group of records following the principle of respect des fonds. This concept advocates that the individual records of a person or organization should be kept together and in their original order and not

¹³ Theodore R. Schellenberg, *Modern Archives: Principles and Techniques* (Chicago: University of Chicago Press, 1968).

¹⁴ Reto Tschan, "A Comparison of Jenkinson and Schellenberg on Appraisal," *American* Archivist 65, no. 2 (Fall/Winter 2002): 180.

¹⁵ Terry Cook, "Macroappraisal in Theory and Practice: Origins, Characteristics, and Implementation in Canada, 1950–2000," Archival Science 5 (2005): 102.

¹⁶ Terry Cook, "Electronic Records, Paper Minds: The Revolution in Information Management and Archives in the Post-Custodial and Post-Modernist Era," Archives & Social Studies: A Journal of Interdisciplinary Research 1 (March 2007): 399–443, accessed 29 January 2016, http://archivo.cartagena.es/files/36-164-DOC_FICHERO1/06-cook_electronic.pdf.

combined with other records.¹⁷ Two key principles underpin this approach: (i) provenance and (ii) original order. Provenance is established when the records of one individual or organization are preserved as one fonds, thereby protecting the evidential value of the records.¹⁸ Maintaining the original order and structure of records can have the benefit of providing evidence pertaining to their original use. However, a key problem with this approach within the context of modern business organizations is that such entities do not typically operate in the linear fashion that the approach presupposes. Rather, record-keeping within such organizations tends to be flexible as new processes are developed, some are replicated, and other methods are replaced with newer protocols.¹⁹ A problem faced with respect to the CPA Australia archive was that multiple organizational mergers had caused the provenance and original order of many records to become confused. Thus, a more adaptable approach to managing the archive was needed, to ensure the provenance and natural order of the records.

Access

The relationship between archival collections and their users has inevitably changed with the spread of electronic formats. Digitization allows for multiple asynchronous usages, meaning that access to large parts of an archival resource is now more feasible. At a more specific level, there are implications for the relationship between the archivist and the researcher and for the way in which digital collections are managed. Enhanced access to archival records via digitization changes both the temporal and spatial relationships between researchers and records. Traditional barriers to access, such as the geographic locations of both collections and their users, are no longer the limiting factors they once were.²⁰ The issue for the archivist has now become one of managing multiple platforms of information delivery, rather than a primary concern for managing and preserving physical resources and facilitating controlled access to the records they contain. McCausland notes that the role of the reference archivist has altered with digitization, creating pressures for the broader records management profession also to adapt.²¹

¹⁷ Wendy M. Duff and Verne Harris, "Stories and Names: Archival Description as Narrating Records and Constructing Meanings," *Archival Science* 2 (2002): 263–85.

¹⁸ Ibid., 267.

¹⁹ Ibid.

²⁰ This is not to suggest that digitization will necessarily eliminate the need to examine physical records, since doing so can enhance an understanding of the context in which a record was created and used.

²¹ Sigrid McCausland, "A Future Without Mediation? Online Access, Archivists and the Future of Archival Research," *Australian Academic and Research Libraries* 42, no. 4 (2011): 309–19.

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In addition to enhancing access, the digitization of records has altered the way in which archival research can be conducted. The ability to perform full-text searches across myriad digital sources can enhance research methodologies and data sets. Such technology enables users to obtain highly specific information unique to their needs. As Maxwell observes, full-text search has allowed researchers to locate obscure – but still relevant – references that previously would have been likely to remain hidden from view.²²

As the above discussion indicates, the debate on archival processes has become more complex in the digital age. There is no consensus within the profession about the most appropriate method of appraising or managing archival resources, nor how such issues should be resolved in specific settings. Cox argues that there is no easy solution to the issues associated with electronic records management, but contends that archivists need to take a multi-disciplinary rather than just an interdisciplinary approach.²³ That is, they need to look beyond the traditional boundaries that have defined their profession and be receptive to new concepts and approaches.

The CPA Australia Archives Project

Context

With antecedents dating to 1886, CPA Australia is one of the world's oldest professional accounting associations. Although originating in Australia, the organization now has a global membership. The value of the CPA Australia archives derives from their longevity and also their depth, as they constitute one of the rare comprehensive collections of professional accounting association records in existence. This makes the archives important at both the national and international levels. Their richness has already been highlighted in a significant body of research into the past and present structure of the Australian accounting profession.²⁴

Throughout CPA Australia's long history, several hundred boxes of archive material have been accumulated, containing records, publications, photographs, and ephemera generated by its major antecedent bodies. These bodies

²² Alexander Maxwell, "Digital Archives and History Research: Feedback from an End-User," *Library Review* 59, no. 1 (January 2010): 33.

²³ Richard J. Cox, "Searching for Authority: Archivists and Electronic Records in the New World at the Fin-de-Siècle," *First Monday* 5, no. 1 (3 January 2000), http://firstmonday.org/ ojs/index.php/fm/article/view/721/index.html.

²⁴ Garry D. Carnegie, John Richard Edwards, and Brian P. West, "Understanding the Dynamics of the Australian Accounting Profession: A Prosopographical Study of the Founding Members of the Incorporated Institute of Accountants, Victoria, 1886 to 1908," Accounting, Auditing & Accountability Journal 16, no. 5 (January 2003): 790–820; Brian P. West, "The Professionalization of Accounting: A Review of Recent Historical Research and Its Implications," Accounting History 1, no. 1 (February 1996): 77–102.

are: (i) the Incorporated Institute of Accountants, Victoria, 1886–1918; (ii) the Federal Institute of Accountants (FIA), 1894–1952; (iii) the Association of Accountants of Australia (AAA), 1910–1953; (iv) the Australasian Institute of Cost Accountants (AICA), 1920–1966; and (v) the Commonwealth Institute of Accountants (CIA), 1921–1952. The amalgamation and dissolution of these bodies led to the establishment of CPA Australia's direct predecessor, the Australian Society of Accountants (ASA), which operated from 1952 to 1990.

The backbone of the CPA Australia archives consists of core records relating to the governance of CPA Australia and its antecedent bodies, including general council and executive committee minutes, cash books, annual reports, ledgers, notices of annual general meetings, memoranda, and articles of association. An equally significant dimension of the collection is the group of records specifically related to the organization's function as a professional accounting association. Material includes membership lists, professional development brochures, handbooks, student information files, examination papers, and course curricula. The collection also contains rare accounting and business publications, such as the full run of the AICA's *Cost Bulletin* and the FIA's *Federal Accountant*. No other repository can claim these holdings, strengthening the statement that the CPA Australia archives are not only notable but also unique in aspects of their contents.

The CPA Australia archives are presently used by a variety of stakeholders. As an example, members are often interested in past membership records – not only their own, but also those of colleagues, family members, and others. Publications and speeches on key topics are also in high demand, along with myriad resources relating to professional development activities. Researchers frequently use a range of records, including governance documents, minutes, past examination papers, solutions to examinations, and results reports, as well as other diverse publications such as the long-established CPA Annual Research Lecture. The organization itself uses the archives to inform its branding campaigns. Genealogical inquiries are also made by the general public, who often seek to uncover details about family members who belonged to CPA Australia.

One of the challenges associated with private archives is the need to come to terms with the collection practices of past entities. This problem is not unique to private archives; however, it is more manifest because of the absence of the legislative requirements to keep specific documents that usually direct the retention practices of public archives. In respect to CPA Australia, the way in which the organization evolved over time, with the merging of antecedent institutions and the emergence of a federally based structure, created a conglomerate of various different types of records. The absence of detailed metadata was a significant limitation on the ability to search these records and on the capacity of the archive to enhance an understanding of accounting and business practices. Recent accounts of the preservation of similarly unique archival collections, such as the Louis Goldberg collection (Deakin University) and the R.J. Chambers collection (University of Sydney), highlight the difficulties involved in making available the content of such large archives.²⁵ In undertaking the project at CPA Australia, the team was mindful of the problems encountered by previous ventures. Through the digitization of key archival materials held by the organization and the creation of tools to evaluate and organize such records, it is envisaged that the project will enhance the preservation of, and access to, these records.

A significant aspect of this project lies in the collaboration of industry partners, qualified researchers, and specialist archivists to formulate a framework of archival preservation that meets contemporary demands for information while also protecting the integrity of the archival resource in a cost-efficient manner. The methods and protocols developed for this project could also be used by archive managers to identify and preserve records that will be added to digitized collections over time.

The innovative aspect of this project is its focus on the development of enduring protocols for stakeholders to appraise and manage collections of digitized material and the creation of tools to assist in this process. In this way, it has the potential to be adapted and refined for use by other organizations undertaking similar projects in the future. Additionally, the outcomes will form the basis of a future project to develop federated networks of business archives at national and international levels.

The Method and Process of Digitization

The archives of CPA Australia represent a large collection of records. At the outset, it was recognized that it was not possible or even desirable to attempt to digitize the complete holdings. As a consequence, a formal set of decision-making protocols was necessary to determine which records should be targeted. This process involved several steps. In the first instance, a detailed inventory of the holdings of CPA Australia was undertaken. The results of this formed the basis upon which a decision-making tool could be constructed. A matrix was developed for this purpose, designed to provide a simple scoring system for evaluating material within the collection. This matrix was then

²⁵ These archives comprise the personal papers, manuscripts, and published works collected over the lifetimes of two of Australia's leading accounting academics. The extent and size of these archives posed a number of problems for evaluating and identifying the records for digitization. The Chambers Archives, for example, consists of 2,500 books, more than 2,500 hard copies of articles and news cuttings, and 15,000 items of correspondence. See Graeme W. Dean, Peter W. Wolnizer, and Frank L. Clarke, "The R.J. Chambers Collection: An 'Archivist's' Revelations of 20th Century Accounting Thought," *Accounting Historians' Journal* 33, no. 1 (June 2006): 145–66; Bradley N. Potter, "The Louis Goldberg Collection at Deakin University: Exploring a Rich Foundation for Historical Research," *Accounting History* 8, no. 2 (July 2003): 9–34.

used as a means of prioritizing items for digitization. Digital images were collated according to series and sub-series listings that linked directly to the limited metadata and archival catalogues held by the CPA Australia archivist. To optimize the potential for networking with other online archives, an OCR format was utilized. Following best-practice conventions, digital images were then saved in two forms: first as TIFF images that formed the preservation files, to be accessed by the archivist only; and second as PDF files, which comprised the basis of the collection available for more general access.

The Inventory

Among the most important early initiatives of the project was an itemized account of CPA Australia's records, including those of its numerous antecedent bodies. At the commencement of the project, there was no clear and up-to-date inventory of the collection. An accurate, first-time assessment was necessary not only to identify each part of the collection, but also to inform the matrix and ensure that it would work effectively.

The inventory was arranged based on the series of records relevant to the entities that eventually amalgamated to form CPA Australia.²⁶ Recorded details for each series included series title, sub-series numbers and titles, as well as descriptive information about the records comprising each series – including physical condition, as well as information about how the records were arranged. Conceptually, the survey was informed by the traditional archival method of microappraisal. In line with the Schellenbergian approach to archival appraisal, the spreadsheet for the survey took into account both the primary and secondary values of each individual record. Figure 1 contains an extract of the spreadsheet for the Governance series.

The inventory served several practical purposes, shedding light on the archival records in a systematic manner and laying the groundwork for appraisal. An important role of the inventory was to enable the breakdown of the record series into detailed descriptions at a more micro level. Figure 2 shows an extract of the detail captured for the FIA Governance series, which includes sub-series for (i) Memorandum and Articles of Association; (ii) By-Laws; and (iii) Codes of Ethics.

The inventory resulted in a greater level of detail for metadata, cataloguing, and series categorization. In turn, this opened up the possibilities for more robust search functionality and increased capacity to narrow searches

²⁶ For a list of antecedent bodies, see the earlier section titled "The CPA Australia Archives Project."

Function	Governance & Corporate Management	Governance & Corporate Management
Provenance	FIA	FIA
Series No.	FIA001	FIA002
Series Title	Memorandum & Articles of Association	Minutes of Meetings
Content	Various versions of memorandum and articles of association (some amended by hand)	Minutes of General Council (1932– 1952); Executive Council (1933–1940, 1940–1946, 1947–1952); Geelong Branch (1941–1974). Also includes FIA Annual General Meeting Program (1951).
Date Range	1894, 1927, 1934, 1941, 1943, 1945, 1948, 1951	1932–1974
Arrangement	Chronological	Chronological
Format	Paper-bound volumes (printed booklet) – B4	Typed sheets, bound in cardboard
Quantity	4 cm; 9 vols. (20 pp. each)	20 cm; 6 vols (300 pp. each)
Condition/ Physical Characteristics	Not at risk	At risk – cover in poor condition, pages loose
Purpose	Forms the constitution of the association: outlines protocol for admission of members; organizational hierarchy; examination details; powers and duties of council, etc.	Gives dates, times and locations of General Council and Executive Committee meetings, along with attendance details and contents of meetings (resolutions, reports, etc.). Minutes for Geelong branch span across merger into ASA period.
Access Conditions	Available for consultation	Available for consultation
Key Terms	FIA – Incorporation; FIA – Constitution; FIA – Memorandum & Articles of Association	FIA – Minutes; FIA – General Council; FIA – Executive Committee; FIA – Annual General Meeting
Notes	Two copies of 1941 Memorandum & Articles of Association (each copy contains different amendments made over the course of the following years)	Additional General Council minutes (1927–1932), stored in FIA Box "Minutes"

Figure 1: Extract of Series Inventory of the Federated Institute of Accountants.

Sub-Series No.	FIA001.1
Sub-Series Title	Memorandum & Articles of Association
Box No.	CPA Archive under "FIA001"
Date Range	1894–1951
Content	Includes FIA memorandum and articles of association for 1894, 1927, 1934, 1941 (amended for 1943, 1945, 1948), and 1951
Purpose/ Description	Forms the constitution of the association. Outlines protocol for admission of members, organizational hierarchy, examination details, powers and duties of council, etc.
Arrangement	Chronological
Format	Paper-bound volumes (printed booklet) – B4
Quantity	4 cm; 9 volumes (20 pp. each)
Access Conditions	Available for consultation
Notes	*Contains a duplicate of 1.1.7

Articles of Association (1894) Memorandum & Articles of

- Articles of Association
- Articles of Association
- Articles of Association (1941)
- Articles of Association (1941) 43
 - Articles of Association (1941) 45
 - Articles of Association (1941) 48
- Articles of Association (1951)

Figure 2: Federated Institute of Accountants – Sub-Series 1.1: Memorandum & Articles of Association.

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thanks to improved granularity. The detailed nature of this survey would later become a key to the integration of metadata for digitized items.

By describing the contents of CPA Australia's archives, the inventory enabled the next step: an analysis that would enhance the understanding of the present and potential real-life uses of the archives. This analysis laid out the value of the archives for various fields of inquiry, such as academic research, submissions to government and business regulators, and family history research. The resulting document summarized not only the types of records in the archives, but also their specific potential uses, such as for biographies, prosopographies, and institutional histories.

The Matrix

Critical to the digitization appraisal process was the construction of a decision-making tool that would allow for a systematic approach to the evaluation of material to be transferred to an electronic format. The approach taken was to develop a decision matrix, which would be applied at the sub-series level. The matrix was further refined through reference to prior literature²⁷ and the use of an application-based analysis to clearly identify present and potential uses of the archive. The application-based analysis was drawn from an evaluation of the purpose and function of the archive and identified five key uses: (i) academic research, including both historical and contemporary research in accounting; (ii) non-academic research, such as family history inquiries; (iii) informing submissions made to governments and regulators; (iv) preserving the history of the organization; and (v) providing input into present-day marketing and branding.

As part of the approach to the construction of the matrix, it was road-tested by other organizations, archivists, and librarians.²⁸ Feedback led to refinements to the selection questions. More importantly, in response to this feedback, extra information and documentation was incorporated to clarify concepts and familiarize knowledge management "outsiders" with the key ideas and assumptions that formed the basis of the matrix. These were included in an elaboration of the criteria. Figure 3 presents the matrix developed for this study.

The matrix identified four key factors to be considered in the selection process. These are value, preservation, use/access, and intellectual property.

²⁷ Dan Hazen, Jeffrey Horrell, and Jan Merill-Oldham, Selecting Research Collections for Digitization (Washington, DC: Council on Library and Information Resources, 1998); Kristine R. Brancolini, "Selecting Research Collections for Digitization: Applying the Harvard Model," Library Trends 48, no. 4 (Spring 2000): 783–98.

²⁸ Archivists from several organizations reviewed and commented on the matrix. While the structure and application received widespread support from those involved, one archivist from a smaller repository commented that presently their inventory and cataloguing was not sufficiently developed to allow them to meaningfully apply the matrix.

Image Could the item be replaced is the item of value to the if if disappeared? How organization itself? vation Is the item rare/ Could the item be replaced Is the item of value to the organization itself? vation Is the item fragile? Is the item susceptible to best display in an electronic highly acidic paper? Does the format lend itself to best display in an electronic highly acidic paper? d Is the item of high Will digitization reduce Will digitization increase use? d Is the item of high Will digitization reduce Note: If an issue, then item not use? d Is the item of public domain? Is the item of a "sensitive" nature for available in the copyright clearance? Note: If an issue, then item not weighted for scanning. gift public domain? Is the areact or second to a sensitive available. Note: If an issue, then item not weighted for scanning. gift public domain? Is the areact or second to a section. Section 4 require for the public domain? gift public domain? Note: If an issue, then item not weighted for scanning. gift available in the average to get a single figure to guide decision. Section 4 require for the average to get a single figure to guide decision. Section 4 require for the average to get a single figure to guide decision. Section 4 require for the		Ouestion 1	Ouestion 2	Ouestion 3	Ouestion 4
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scanning.	Intellectual prope scanning.	rty/copyright: In put	olic domain; if sensitivity and	or IP/privacy issues identified, ther	n item not weighted for

Figure 3: Decision Matrix for Selection of Material for Digitization.

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It was recognized that the selection of material for digitization required an assessment of a range of factors, including the physical condition of the material, access conditions, and its current and future significance. A purpose of the matrix was to provide a method that could simplify this process and a tool that was accessible not only to qualified archivists, but also to those working in a corporate environment where company archives may be located.

Determining the elements that contribute to the value of a document raised an important question. Should value be related directly to its significance in terms of its research use or was a broader definition more appropriate? Given the multi-faceted demands of the users of the CPA Australia archival collection,²⁹ a wider definition of value that looked beyond its use for research was applicable. To this end, four key questions were identified. The first focused on the document's uniqueness, taking into account its rarity and significance in terms of the total archival collection. The second question was related to the first and considered the extent to which material could be replaced: was it held by other repositories and if so was it easily accessible? Thirdly, the significance to the organization was considered: were the items evaluated of material importance to the history of the organization and its ongoing operation? Lastly, the broader value of the item was considered. This included its research value, both current and potential, and also took into account the richness of the information provided and the way in which it added to wider knowledge of the accounting profession.

Digitization provides a practical option for the *preservation* of material that may be fragile, but for which demand for access exists, by providing an alternative accessible resource. However, not all items are suitable for conversion to digital copy. Large photographs or letter books containing copies of correspondence on onion-skin paper, for example, create issues in terms of file sizes and quality. Questions relating to preservation were intended to assess two aspects: (i) Was the item fragile and therefore likely to benefit from the process? (ii) Was the item in a format suitable for conversion? Four questions were designed to establish whether digitization would assist in the preservation of the original items. While question one related to the current state of the item, question two was more concerned with whether current and future use may contribute to deterioration over time. Question three then considered whether digitization was practical in terms of replicating the information presented in the document. Question four was an extension of the first two questions and was intended to capture information stored on "old technology." It was particularly relevant to the organization's archival collection, which contained a number of oral history interviews on

²⁹ These included the requirements of the organization, as well as the needs of members, regulatory agencies, researchers, and members of the public.

cassette tape. A key concern of the organization was to preserve this material by conversion to digital media.

The third consideration in the decision matrix was *usage*. To a certain extent, the assessment of this issue had been implied in questions three and four on value. In order to have value to the organization and more generally, the item will typically be of some use. Thus, an evaluation of the frequency of usage was incorporated into the matrix, with "high-use" items considered both from the perspective of the organization and the broader research community. In addition, attention was given not just to current levels of use, but also to potential future levels that may occur as digitization creates the facility to make the resource available to a wider audience. In this context, when considering items for digitization, material that may be of relevance to a very localized audience (such as the minutes of meetings held by branches), was weighed against that which had a much wider appeal.

The final issue – and one of the most critical – to be addressed in the selection of material for digitization is that of *intellectual property and copy-right*, both of which can intervene to veto the process. If appropriate permissions are not available or the information is not in the public domain, then the project may not proceed. In the case of corporate archives and archives such as those held by CPA Australia, intellectual property and copyright of records are owned by the organization. Permissions to proceed are only likely to be a problem when ownership of the records lies with a third party. In instances such as this and where corporate archives contain items not generated by the organization itself, appropriate permissions around copyright and intellectual property need to be obtained. Questions one and two of section four of the matrix address these issues.³⁰

There are, however, other related issues that must be addressed in the evaluation process. The archive may contain information that the organization does not want made publicly available because of what it reveals about the operation of the business. The sensitivity of material to marketing or strategic decision-making activities needs to be taken into account. Confidential minutes of meetings, for example, may not be considered as suitable for digitization until the lapse of a specified period of time (to be determined by the organization). Similarly, if items identify specific individuals and their personal information, privacy issues could dictate the digitization decision. For example, records that identify an individual's salary package or other personal information may need to be sequestered. Questions three and four in section four deal with these issues.

³⁰ In Australia, copyright typically extends for 70 years after the death of the creator, or 70 years after the date of publication for posthumously published works.

The first three elements of the matrix used a scoring system to rank material, while the last required a yes or no answer. Individual scores ranged from one to five, with one being very important. The lower the aggregate score the higher the value of the item in terms of digitization. For example, if an item scored an average of one (the lowest possible score) and received a "no" for each question in section four, that suggested digitization was highly desirable. The final score was calculated as an average of the scores for the three elements. Table 1 provides an example of the selection process for two types of records.

In table 1a, the records of admission to the Federal Institute of Accountants are evaluated. The average score for these records was 1.45, suggesting that digitization would be very advantageous. These records are unique and fragile and also an important resource for CPA Australia and its members. Table 1b shows the assessment of an educational lecture series representing 10 leatherbound volumes. This item scored an average of 3.1, suggesting digitization was not a priority. Although not common, these volumes are not particularly rare and are relatively easy to locate via a basic keyword search of the Australian National Library's online database, Trove. In addition, the volumes do not have an intrinsic value to the organization and were accessed infrequently by the wider community.

In applying the matrix at the sub-series level across the collection, a clear cut-off score emerged.³¹ Records that received an average score of less than 2.5 were assigned a high priority for digitization, while those with a score greater than this were generally deferred. For example, the minutes of the executive council of the Federal Institute of Accountants received a score of 1.73 and, as a result, have been digitized. However, minutes of the individual branches of this organization scored much higher and were not digitized (for example, minutes from the branch in Geelong – a large regional city in Victoria – scored 2.8). Although they are unique documents, they were assessed as being of limited use to both the organization and the broader academic community. In this way, the matrix delineated records having a *prima facie* case for digitization from those that did not.

Although the cut-off score was subject to interpretation, it became clear that as more records were assessed, the benchmark score of 2.5 captured the majority of items that fulfilled the requirements of the application analysis. However, while the matrix became an important method of assessing records for digitization, it was used essentially as a guide rather than a definitive algorithm. It was important that flexibility in decision-making be maintained in order to deal appropriately with unusual items whose distinctive character was

³¹ It was in fact rare that an item received a score of around 2.5. More typically, results were either below 2 or above 3.

Table 1a: Ev:	Table 1a: Evaluation of Federated Institute of Accountants Applications for Admission.	Accountants Applicatio	ns for Admission.		
FIA009 Register	gister for Applications of Admission to FIA (1896–1916)	on to FIA (1896–1916)			
	QUESTION 1	QUESTION 2	QUESTION 3	QUESTION 4	TOTAL
Value	Is the item rare/unique?	Could the item be replaced if it dis- appeared? How easily?	Is the item of value to the organization itself?	Does the item have sufficient intrinsic value to justify digitization, e.g., research value?	
Score	1	1	1	1	4
	The item is unique – an original document (no other copies exist); deals with content specific to the organization.	The record cannot be replaced nor is its con- tent captured or covered in any other document.	A key resource in recording the history of the organization and its members.	Offers researchers a unique insight into the "demographics" of accounting/the profession.	
Preservation	Is the item fragile?	Is the item susceptible to damage, e.g., printed on highly acidic paper?	Does the format lend itself to best display in an electronic environment?	Is the item in a format that is no longer viable, e.g., floppy disk?	
Score	1	1	1	5	8
	Leather-bound handwritten volume; ink showing signs of fading and paper worn.	Use will lead to further fading of ink and breakdown of paper.	Yes; books are relatively easy to digitize and present well in a digital format.	Format not relevant (hard-copy record).	
Use and access	Is the item of high use?	Will digitization reduce wear on the original?	Will digitization increase use?		
Score	2	1	1		4
	Used to meet members' requests for information; infrequently drawn on to support internal inquiries; com- monly used in academic research.	Yes; digitization will almost entirely remove the need to consult original record.	Yes; digital copy is an effective substitute, making record easier and more convenient to access.		
Intellectual property/ copyright	Is the item available in the public domain? No.	Is there a need for copyright clearance? No.	Is the item of a "sensitive" Are there nature from CPA Australia's involved? viewpoint? Uncertain No.	Are there IP/privacy issues involved? Uncertain.	
Total (average)					16 (1.45)

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Table 1b: Eva	Table 1b: Evaluation of Federal Institute of Accountants' Lecture Series.	ccountants' Lecture Ser	ies.		
FIA019 Account	ountants' and Secretaries' Educational Society Lectures	ational Society Lectures			
	QUESTION 1	QUESTION 2	QUESTION 3	QUESTION 4	TOTAL
Value	Is the item rare/unique?	Could the item be Is the item of value replaced if it disappeared? organization itself? How easily?	Is the item of value to the organization itself?	Does the item have sufficient intrinsic value to justify digitization, e.g., research value?	
Score	4	4	3	3	14
	The item is not "common," but neither is it particularly rare (there are at least 11 libraries that hold copies).	A copy could potentially be sourced from a public collection.	The document has limited value to the organization from a functional/operational perspective; serves as a "historical curiosity."	Gives a good sense of the intellectual climate and debate surrounding the accounting profession at the time.	
Preservation	Is the item fragile?	Is the item susceptible to damage, e.g., printed on highly acidic paper?	Does the format lend itself to best display in an electronic environment, e.g., photographs?	Is the item in a format that is no longer viable, e.g., floppy disk?	
Score	3	3	1	5	12
	Printed booklets; in good condition but somewhat worn.	Paper is susceptible to damage from use and UV.	Paper is susceptible to damage from use and UV. digitize and present well in a digital format.	Format not relevant (hard-copy record).	
Use and access	Is the item of high use?	Will digitization reduce wear on the original?	Will digitization increase use?		
Score	4	2	2		8
	Not relevant to members' needs; very infrequently drawn on to support internal inquiries; inter- mittently used in academic research.	Although rarely used, digitization will almost entirely remove the need to consult original record.	Yes; digital copy is an effective substitute, making record easier and more convenient to access.		
Intellectual property/ copyright	Is the item available in the public domain? No.	Is there a need for copyright clearance? Uncertain.	Is the item of a "sensitive" nature from CPA Australia's viewpoint? No.	Are there IP/privacy issues involved? No.	
Total (average)					34 (3.1)

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not fully captured by the matrix. An example is the holdings of the Federal Accountant. This publication was the official organ of the Federal Institute of Accountants from 1916 to 1952. These volumes received a high score (3.7), primarily because they are not unique or fragile. Nevertheless, the decision was taken to digitize this journal because of its value to the organization in supplying membership data. This decision has since paid off, as the digital record has become a valuable resource for the archivist and librarians at CPA Australia.³² This example highlights the need to be adaptable in applying the matrix. While it provides a basis for appraising material suitable for digitization, there will be instances where some items do not fit neatly into the model. In the case of *Federal Accountant*, a resource used primarily by CPA Australia, the score it received did not reflect its value to that particular cohort of users. In this respect, other factors, such as the specific requirements of the organization, need to be taken into account. In the business archives context, other instances where such discretion may apply include regulatory or reporting obligations and the need to share the information with different arms of the business.

About 300 records, equating to 120,000 TIFF files,³³ have been digitized, but limits to funding have restricted further conversion. The matrix was instrumental in establishing priorities that enabled maximum benefits to be achieved from the limited funds. Other parameters sometimes intervened. For example, physical constraints meant that some parts of the holdings – in particular, large photographs – were not easily digitized. Despite receiving scores indicating that digitization was desirable, the processing of these items has been deferred pending the resolution of physical limitations associated with the process.

Once the digitization process was complete, every digital record was catalogued according to the inventory description and a metadata list prepared. Although full access to the online resource is not yet in place, the organization has reported much easier access to, and use of its archives. Digital search processes have allowed for easier and more rapid access to information. They have also provided a way of retrieving more detailed data than previously existed. The archivist has found that it has changed the way in which research is undertaken, not only in terms of the speed in which information can be found, but also in the utilization of interlinking search functions used to drill down into specific records.

³² A further example concerns records such as branch council minutes. While these records scored relatively highly, indicating that digitization was not a priority, they sometimes included notes handwritten by attendees at meetings, which would enhance the uniqueness of the record (question 1) and potentially heighten its intrinsic value (question 4). This would suggest that the particular record would have a higher priority for digitization.

³³ Each TIFF file represents one page of a document.

Discussion

Implications for the Management of Archival Resources

As Cook predicted, digital technology has challenged fundamental archival principles and management processes.³⁴ The diversity of the CPA Australia collection, which incorporates the records of a number of antecedent bodies, as well as significant and rare accounting and business publications, posed a number of issues that had to be addressed in the assessment of the archive. A reliance on a traditional records management (custodial) approach would have missed the opportunity to identify contextual and functional aspects of the resource and its place within the broader network of accounting archives, such as the aforementioned Chambers archive and the digital archive of the Institute of Chartered Accountants in England and Wales.)

Notwithstanding this issue, the concepts of provenance and original order provided an underlying basis for the survey and appraisal of the collection. It was also important to acknowledge the mutual relationship between archive managers and users/researchers. In this respect, Schellenberg's model emphasizing the end value to researchers was a key factor in the archival selection and appraisal process. Digitization has the capacity to disrupt the fundamental archival and historical relationships between records unless a conscious effort is made to preserve these links. In this context, it is important to ensure that a preliminary assessment process is established. In the case of the CPA Australia archives, the initial and detailed inventory provided the basis for the analysis of the collection, and this proved to be an important step in the decision-making process. It highlighted the links between various elements of the collection and their value to a range of areas of academic inquiry. This process reinforced the conclusion that the ad hoc digitization of selected records will not typically encapsulate the true value and usefulness of an archive.

In this case study, the approach taken has been to draw on the extant literature to develop a method suited to the archives of a privately owned professional association. Unlike the repositories of government and other public institutions, where records management systems have developed progressively over time and reflect advancements in archival science, those of business and professional associations have often been driven by multiple agendas. Organizational restructures, mergers, and acquisitions can result in a conglomeration of records with few connecting synergies surviving. As noted previously, CPA Australia evolved from a number of antecedent bodies, each with its own set of records. In this respect, it was necessary to look beyond the

³⁴ Cook, "Electronic Records, Paper Minds," 401.

basic microappraisal approach. Instead, identification of the essential roles and activities of the organization was important for adding context to the appraisal process. From this, the development of an application analysis provided a further tool with which the decision-making process could be enhanced. The result was a set of protocols that reflected not only the historical value of the collection, but also its current function in facilitating the operation of the organization and servicing its members.

The digitization of the CPA Australia archives has undoubtedly enabled greater access, both in terms of time and location. However, it has also raised other management issues. The need for clear and concise supporting documentation and the construction of effective finding aids to support the digital content of the archive has been an important accessory that has required careful design. In this respect, the inventory and its associated metadata were important in providing the link between the archival resource and its digital copy, ensuring accurate representation of the original records. The project was not without its challenges. Storage and capacity issues brought to the fore the problems of a technology-dependent system. This was reinforced when problems arose around the support for the software used to manage the digital system. The lesson learned was that in developing a digital archive, a risk management plan also needs to be in place to cover the contingency of technological failure. A further issue, which has delayed the more general release of the digital archive, has been that of storage space. The capacity of the organization's server to store digital material has been limited, in spite of various upgrades to the information management systems. This has meant that no central storage space has been available from which to develop open-access facilities. While it is expected that this will be rectified over time, it has meant that the full potential of the digital library is yet to be realized.

Implications for the Interface between Researcher and Archivist

Digitization enhances research opportunities – in both breadth and scope. It also has implications for the research methods and approaches used by academic researchers. At the very least it increases the capacity to test existing hypotheses and refine results at a level not previously possible, given the physical constraints of a conventional archive. The digitization of the CPA Australia archives has revealed several potential avenues for such research. For example, it has enabled an effective means of undertaking a deeper analysis of the "genealogies of calculation" that emphasize the "historical contingency of contemporary [accounting] practice," and which may complement or challenge existing interpretations.³⁵ It has also enhanced the capacity

³⁵ Peter Miller and Christopher Napier, "Genealogies of Calculation," Accounting, Organizations and Society 18, no. 7–8 (October 1993): 632–34.

for multi-entity research, which may cross repository boundaries. It has created the opportunity to explore the "margins" and the "hidden" nuances of archival collections that may not be apparent without recourse to digital search tools.

This increased capacity for research and the change in the way in which researchers use archive collections raises a number of issues that the archival community may have to address in the future. The role of the archivist in relation to the researcher has traditionally been one of mediator. That is, in providing reference services the archivist has been the vital link between the researcher and the information being sought.³⁶ This process revolves around physical holdings and, as such, the services provided are geared to facilitating access to the actual collection. While this role will continue, digitization has added to the complexity of this service provision. Digitization broadens the scope for the application of new research methodologies that may require archival information to be accessed and presented in new and different formats. The challenge for archivists then is to keep abreast of innovative and emerging methodologies to ensure that their role as mediators in the information gathering process continues to add value to researchers. Adams makes a similar point in describing changes in the use and users of the National Archives and Records Administration.37

Digitization improves access, but that access is only as good as the finding aids developed to support the process. In the past, the link between the archivist and researcher has been by direct dialogue. In such circumstances, the service provided by the archivist is specifically tailored to the needs of the researcher. With digitization, a more indirect relationship is fostered. The researcher's first contact is the online search facility, making the robustness of these finding aids critical to the usability of the digital collection. The experience of the CPA Australia project suggests that this is a key issue that needs to be addressed in the setting up of the digitization process. Archivists have an important and ongoing role to play in both the construction of online search facilities and their maintenance.

A further implication of the spread of digital archives is the scope for cross-repository linkages. Evans, McKemmish, and Bhoday make the point that archivists are challenged to develop archival systems for a global society seeking information beyond that available at the level of the individual archive.³⁸ An outcome of the CPA Australia project was the development

³⁶ McCausland, 309.

³⁷ Margaret O'Neill Adams, "Analyzing Archives and Finding Facts: Use and Users of Digital Data Records," *Archival Science* 7, no. 1 (2007): 21–36.

³⁸ Joanne Evans, Sue McKemmish, and Karuna Bhoday, "Create Once, Use Many Times: The Clever Use of Recordkeeping Metadata for Multiple Archival Purposes," *Archival Science* 5, no. 1 (2005): 18.

of linkages with other repositories, creating the scope for extending the digitization process across archival collections, as well as linking existing digital accounting archives. Collaboration between different archival institutions could result in the creation of digital collections that unify records that are physically disparate but share similar provenance or origin. For this to be achieved effectively, archival processes – specifically in respect to the management of metadata – need to be consistent and have the capacity to be applied across multiple repositories.

The CPA Australia project has illustrated a number of issues that need to be addressed in terms of the management of archival collections and the services provided to end users. The debate within the archival profession indicates that archivists are embracing such challenges and are continually adapting processes and practices to address the new and evolving digital environment.³⁹

Conclusions: Lessons, Limitations, and Future Directions

The digitization of archival collections offers a wealth of potential benefits for end users and the archival profession. If done properly, it has the capacity to enhance a collection by revealing contextual complexities that are lost within paper-based records. The power of digital search engines and the scope to transcend constraints imposed by geographic and temporal dimensions has the potential to alter public interfaces and the ways in which archival collections are managed and made accessible. For organizations wary of investing in a digitization project, this study illustrates a largely positive case for expenditure on such projects.

Digitization has implications for appraisal, and its emphasis on the need for more flexible appraisal models will be a driver of this field of research into the future. This case study was informed by a variety of approaches to appraisal and records management. A key lesson learned is that while it is important to have a planned and logical approach, there also needs to be a degree of flexibility that allows for special cases to be identified. The use of the matrix in this respect provided a valuable tool, but it was recognized that although it was possible to make a majority of decisions in this manner, there could be circumstances in which greater professional judgment is needed.

The case study also highlights the fact that digitization processes are not without their issues and difficulties in terms of the technology used, the skills required, and the costs involved. The implication is that planning and risk management are an essential part of the process. Digitization in this respect needs to be viewed as an essential part of the record preservation process

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and not just an add-on. Just as strategies to protect and maintain paper-based archives have evolved, so too must those applicable to digital archives.

The case study approach of this research does have certain limitations. CPA Australia is a unique institution and, as such, the protocols developed to digitize the collection may not be generally applicable in other settings. Furthermore, the organization had a relatively good records management system to start with. It also consciously recognized and valued its archival collection. This provided a solid framework upon which to build an electronic repository.

Despite these limitations, the case study offers a number of insights. CPA Australia represents an association that has been in existence for well over a century, and its archives comprise a diverse and multi-faceted collection of paper-based records and ephemera. It is one of few privately held collections in Australia that have been the subject of the conversion process. The lessons learned have relevance for other such collections, and these include issues related to access, intellectual property, and privacy. As a business/professional association study, the CPA Australia example is particularly relevant for other similar organizations seeking to evaluate and preserve their collections. The project contributes to the development of a set of selection criteria that could be applied in the digitization decision-making process. Most importantly, the project has developed a process of appraisal and management that can be replicated and applied to other collections of records and related archival materials.

A further outcome of the project is to create the potential for collaboration between different archival institutions and the linking of digital repositories. In this respect, this study has laid the groundwork for the development of a nationally, and possibly internationally, federated business archive.

The advent of technology that facilitates the digitization of archives and other records will transform both the preservation and use of research collections into the future. The still-evolving role of the archivist in this process will be critical to the development of effective archives management processes in this new environment. Case studies such as that of CPA Australia can provide valuable input, informing the archival community of the practical application of digital technologies. The study indicates that there are positive outcomes if the process is informed by best practices underpinned by theory and the consideration of archival processes.

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