Chapter 61
Blockchain and the Research Libraries:
Expanding Interlibrary Loan and Protecting Privacy

Anthony L. Paganelli
Western Kentucky University, USA

Andrea L. Paganelli
Western Kentucky University, USA

ABSTRACT

This chapter will examine the theoretical uses of blockchain technologies in research libraries. Technology has enhanced the services and operations of research libraries since the early implementation of computerized cataloging systems. Blockchain technology provides research libraries with the opportunity to decentralize services, while also maintaining and strengthening digital rights management. Research libraries will be able locate services that can be decentralized to provide patrons with a more effective and efficient service. The blockchain technology has the potential to expand library collections through distributed verifiable sovereign identity, which would allow patrons to securely access information from multiple libraries while maintaining their privacy. Libraries will be able to evaluate services and programs to determine best uses for blockchain technology.

INTRODUCTION

When people mention technology, most would relate the term technology with computers or some form of electronic device. However, libraries have embraced technology as a broader term that is inclusive of pre-digital tools implementing various forms of technology well before computers. Libraries have utilized technology for centuries that includes the Gutenberg printing press that increased library collections. Due to the increase of collections, print book catalogs were created for librarians and patrons to access books.

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Eventually, the catalog books were changed to cards that would provide accurate record of the collection without having to reprint the catalog book as books were acquired or withdrawn. The card catalogs were enhanced with the invention of the typewriter, which the Library of Congress created in 1902.

A major technological advance for libraries was the implementation of the Machine Readable Cataloging (MARC) format in the mid-1960s that automated the cataloging process and eventually led to the creation of catalog cards. Because of the Machine Readable Cataloging format, libraries were able to use that format to create the Online Public Access Catalog, which is what most people are familiar with as the library's online catalog of the library's collection. From this technological format, libraries later created the database management systems that allows users to go directly to the data entry or record for the information, whether it be a book in the collection or an electronic source. The computer technology has provided libraries to process, manage, and access information effectively and efficiently.

While this internal technological transformation for libraries was beneficial for libraries to maintain the needs of patrons, computer technology also altered workflows and traditional services. Many of these traditional services, such as reference services, processing print books and materials, and cataloging were drastically changed. In some instances, these jobs were eliminated or greatly reduced Again, technology is on the verge of changing how research libraries operate with the introduction of Blockchain technology. The technology has the potential to alter the ways research libraries will acquire academic materials, collaborate with publishers and vendors, and conduct scientific research.

Since the introduction of computer technology in the library, academic library leaders have continued to predict the technological trends and innovations that will prepare the library to meet the needs of their patrons and the institution. With the advent of new technology implementations, libraries have embraced technology that will have an impact on many facets of library organizations' operations. Currently, Blockchain has been considered as disruptive technology that will have an impact on many facets of organizations' operations Therefore, library administrators are carefully considering how to better understand Blockchain prior to attempting implementation.

Blockchain technology is another innovation that library administrators are viewing as a possible important technological tool. The importance of library administrators' perspective of technology will provide a foundation in the future of how the technology will be used and create best practices to be more effective for the organization and patrons. Some library administrators view technology as transformational, which is often the case as technology can be disruptive to an organization's operations (Cox, Pinfield, & Rutter, 2019). As a librarian you can't help but wonder, is Blockchain the next revolution in library practice or just a passing trend?

Why Blockchain and the Research Libraries?

According to Cox, Pinfield, & Rutter (2019), technology drives social change, which pressures libraries to stay abreast of new technology to meet the needs of patrons. Major industries are implementing the technology for various reasons, such as to aid in fraud prevention, which can cost companies millions of dollars. Lindenmoyer and Fischer (2019) noted that "the following industries are implementing some type of Blockchain: the diamond industry, medical industry, retail law offices, energy management, accounting, and education to a small extent" (p. 77). This includes the health sector that has increased usage of Blockchain in regards to supply-chain management (Bhargava, 2019; Hirsh & Alman, 2019).

If this many fields that manage large amounts of data are having success using Blockchain technology how could it aid or impact library function and technology programming? As libraries are continually