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Advantages and disadvantages of technological implementation in archive systems: A systematic literature review

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Abstract

Background of the study: In the rapidly developing digital era, the implementation of technology in archival systems has become inevitable. Archive systems are no longer limited to storing physical documents on shelves or filing cabinets, they have evolved into complex and integrated digital systems.
Purpose: This research aims to investigate the benefits and disadvantages of implementing technology in archive systems.
Method: This research uses a Systematic Literature Review (SLR) approach to identify and analyze relevant articles about the implementation of technology in archive systems. This research is limited to articles published in the last five years in the Scopus database.
Findings: The findings of this research reveal that the implementation of technology in archive systems provides significant benefits in terms of efficiency and information accessibility. However, it also presents risks and challenges such as high implementation costs, vulnerability to information security breaches, and risk of data loss.
Conclusion: Although the implementation of technology in archival systems promises many benefits, organizations must carefully consider the associated risks and challenges. By better understanding the implications of these steps, organizations can make better decisions in their records management.
Keywords: Technology Implementation, Archival Systems, Systematic Literature Review, Records Management.

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Introduction

In the rapidly developing digital era, the application of technology in various aspects of life has become necessary. One area that has experienced significant changes due to technology is the management of archives and information. The archiving system is no longer limited to storing physical documents on shelves or filing cabinets but has evolved into a complex and integrated digital infrastructure (Trace, 2020).

Rapid technological developments have brought many changes to the archiving system. The transition from physical to digital systems allows for faster and easier access to information and increases efficiency in archive management. The use of technologies such as cloud computing, blockchain, and artificial intelligence (AI) has changed the way data is stored, accessed, and managed. For example, cloud computing allows for the storage of large amounts of data online, which can be accessed from anywhere and at any time. Blockchain offers higher data security with a decentralized storage system that is difficult to hack. Meanwhile, AI helps automate the process of managing archives, such as document classification and information retrieval, which can save time and human resources.

The application of technology in the archiving system certainly brings several significant changes to organizations, both from the public and private sectors (Safitri, 2019). In this context, a systematic review of the advantages and disadvantages of implementing technology in archiving systems becomes increasingly relevant and important. This review will provide a deep understanding of the benefits gained from the use of technology, as well as help identify the risks and barriers faced.

The importance of an effective and efficient archiving system has been widely recognized by organizations in various sectors (Gantika, Busthomi, & Vaughan, 2022) as Carrier's research (2005) in his book explains that the application of procedures in digital forensics through structured archive management can speed up the investigation process. In addition, Kohli, and Tan (2016) show that the use of good and effective medical record management ensures reliability and transparency in tracking medical supplies.

Furthermore, research by Rijal and Saranani (2023) shows that blockchain technology improves security and transparency in the management of public archives. However, this study does not discuss the difficulties of integration with existing systems and the high costs that may arise. Meanwhile, the findings of Solovyev and Tarkhanov (2023) show that cloud-based digital archive systems reduce operational costs and increase the efficiency of long-term document storage. However, they do not delve into the issues of data security and dependency on service providers. In addition, Mosha and Ngulube (2023) emphasize the importance of consistent metadata standards in digital archival systems to improve the accuracy and accessibility of information but do not discuss the challenges of implementation across organizations with different needs.

Further research by Kumar (2024) found that AI can reduce manual workload by automating document classification, but did not deeply address the ethical challenges and security risks associated with AI. Additionally, Cerchione et al. (2023) found that electronic systems improve the quality and accuracy of medical records in health records management, but did not account for the risk of electronic system errors. Furthermore, Chatterjee, Rana, and Dwivedi (2024) found that data analytics technology enables better decision-making in records management, but did not address the challenges of ensuring the quality and accuracy of the data analyzed. Finally, Cushing and Osti (2023) highlighted the importance of training and skills development for archives staff in the face of technological change but did not address the difficulties of providing effective and ongoing training.

Although many studies have discussed the benefits of implementing digital archive systems, there are still gaps in previous research that have not comprehensively discussed the

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risks, challenges, and obstacles to implementing technology in archival systems. This study offers a novelty by systematically reviewing the advantages, risks, disadvantages, and challenges associated with implementing technology in archives systems, as well as how to overcome these challenges.

Technology has offered innovative solutions to the challenges faced by traditional archiving systems. Electronic records management systems and records management software have enabled organizations to store, manage, and access information more efficiently than ever before (Berdik et al., 2021). In addition, new technologies such as AI and data analytics have opened up new opportunities to analyze and understand library materials in greater depth (Sari, Masruri, & Rosalia, 2023). However, while the adoption of technology in archiving systems promises several significant benefits, it is important not to overlook that these steps can also pose several risks and challenges. High implementation costs, information security vulnerabilities, and the risk of data loss are just a few examples of potential drawbacks that organizations need to seriously consider before adopting new technologies in their archiving systems. Therefore, a systematic literature review of the advantages and disadvantages of implementing technology in archiving systems is needed. This review will help in fully understanding the implications of these steps, as well as assist organizations in making more informed decisions. As discussed earlier, many studies have discussed archive management and digital archives, but none have specifically discussed the advantages and disadvantages of implementing archive technology and using the Systematic Literature Review (SLR) method. The following are the research questions proposed in this review:

What are the main advantages, risks, disadvantages, and challenges associated with implementing technology in archiving systems, and how to overcome these challenges?

The formulation of research questions is based on the PICOS framework in Shaffril, Samsuddin, and Samah (2020), with the following details.

1. Population (P): Organizations or institutions that implement technology in archiving systems.
2. Intervention (I): Use of technology in archive management, including archive management software, cloud storage systems, automation, and other technologies.
3. Comparison (C): Comparison between the implementation of technology in archive management and archive management without using the latest technology.
4. Outcome (O): Advantages, risks, and disadvantages, as well as challenges and how to overcome them.
5. Study design (S): Systematic literature review of empirical research, case analysis, and practice reports that evaluate all aspects of technology implementation in archiving systems.

By answering these questions, this literature review can provide a better understanding of the complexity and implications of technology implementation in archiving systems.

Thus, this study aims to systematically review the advantages, risks, disadvantages, and challenges associated with the application of technology in archive systems, as well as how to overcome these challenges. Then, the results of this study are expected to provide comprehensive guidance for organizations in making decisions regarding the application of technology in their archive management.

Method

This research uses the Systematic Literature Review (SLR) method. SLR is a method that involves the process of identifying, assessing, and interpreting all available research evidence with the aim of answering specific research questions. According to Calderon and

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Ruiz (2015) in Yunanto and Rochimah (2017), SLR is a method for identifying, evaluating, and interpreting all research that is relevant to the problem formulation or particular topic being studied. Meanwhile, Kitchenham, et al. (2009) in Juhari, Anshori, and Safrizal (2024) stated that SLR is carried out to identify, evaluate, and interpret all research results that are relevant to certain research questions, specific topics, or phenomena that are the focus of attention.

In conducting an SLR on the advantages and disadvantages of implementing technology in archival systems, researchers adopt a systematic and structured methodological approach. This research method is useful for ensuring that this literature review can be carried out thoroughly and reliably produce meaningful findings.

Identify Research Objectives

In SLR research it is necessary to clearly identify the objectives and scope of the research (Priharsari, 2022). In this case, the main aim of the research is to investigate the advantages and disadvantages of implementing technology in archive systems. The scope of the research will cover various aspects of technology implementation, including the expected benefits, as well as the risks and challenges faced.

Identify Information Sources

The next step is to identify relevant sources of information that will be used in this literature review. For this research, researchers used the academic database Scopus. Scopus is a multidisciplinary database that includes journal articles, conferences and other literature, covering various fields, including information technology and information science (Aksnes & Sivertsen, 2019).

Search Strategy Development

A comprehensive and structured search strategy was used to identify studies and articles relevant to the research topic. This involves using relevant keywords or *search queries (SQ)* using Boolean, such as *((" benefit* " OR " *advantage* ") AND (" *risk* " OR " *disadvantage* ") AND (" *implementing* " OR "*information management* ") AND (" *technology* ") AND (" *archive* " OR " *archival* ")). In the context of this research, only journal articles published in the last 5 years and open access will be selected. Articles published within the last five years were selected to ensure that the data used is the most recent and relevant to current conditions.

The type of article chosen is a research article because it presents detailed empirical data and analysis that are important for comprehensively understanding the advantages and disadvantages of implementing technology in archival systems. According to Suri (2020), research articles offer an in-depth evaluation and interpretation of research findings, which is essential for building a strong evidence base for systematic reviews. This allows researchers to gain a deeper understanding of the advantages, risks, disadvantages, and challenges associated with implementing technology in archiving systems. The search strategy will also limit the literature search to English, to ensure that this literature review covers a global view of the topic under study.

The selected articles must also have subject areas in the social sciences because the implementation of technology has widespread and complex impacts in the social context (Kusnandi, 2019). This is not only related to technical aspects, but also to the interactions that occur between individuals, technology and their work environment. In records management, the social aspect is very important because it involves various stakeholders, including technology users, system administrators, and organizational decision makers (Siregar, 2019). Each of these stakeholders has a different role in the use, implementation and success of the archive system implemented. Apart from that, social aspects also include interactions between

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individuals and technology, as well as their impact on individual and group behavior, habits and work patterns (Yoga, 2019). For example, the implementation of a new records system may change the way individuals or groups interact with information, require them to adapt their work processes, and may even impact their well-being at work.

Selection of Inclusion and Exclusion Criteria

Reviewed articles were researcher-reviewed articles on the following topics, published between May 2020 and May 2024, including:

a. Articles with titles/abstracts/keywords according to the previously determined SQ, which are research articles that cover predetermined research questions.

Articles on the following topics are excluded:

a. Articles that focused on the procedures or methodology of EBSE or SLRs were excluded because they did not provide empirical data relevant to the research topic.
b. Duplicate reports from the same study. When multiple reports of the same study were found, only the most complete version of the study was included in the review to avoid data redundancy (Lund, et al., 2022).

Data Extraction

Relevant data were systematically identified and extracted to ensure appropriateness to the research objectives, as suggested by Tranfield, Denyer, and Smart (2003). The information to be extracted includes the title of the article, author, year of publication, method and findings related to the implementation of information technology. The data extraction process was carried out independently by researchers to ensure accuracy and reliability.

Data analysis

The extracted data is then analyzed to identify the main advantages of implementing technology in archive systems, as well as the associated risks and disadvantages. Analysis was also conducted to identify ways to overcome risks and obstacles that arise during the implementation of technology in archival systems, as well as to evaluate how a systematic review of this topic could provide organizations with better insights.

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Result and Discussion

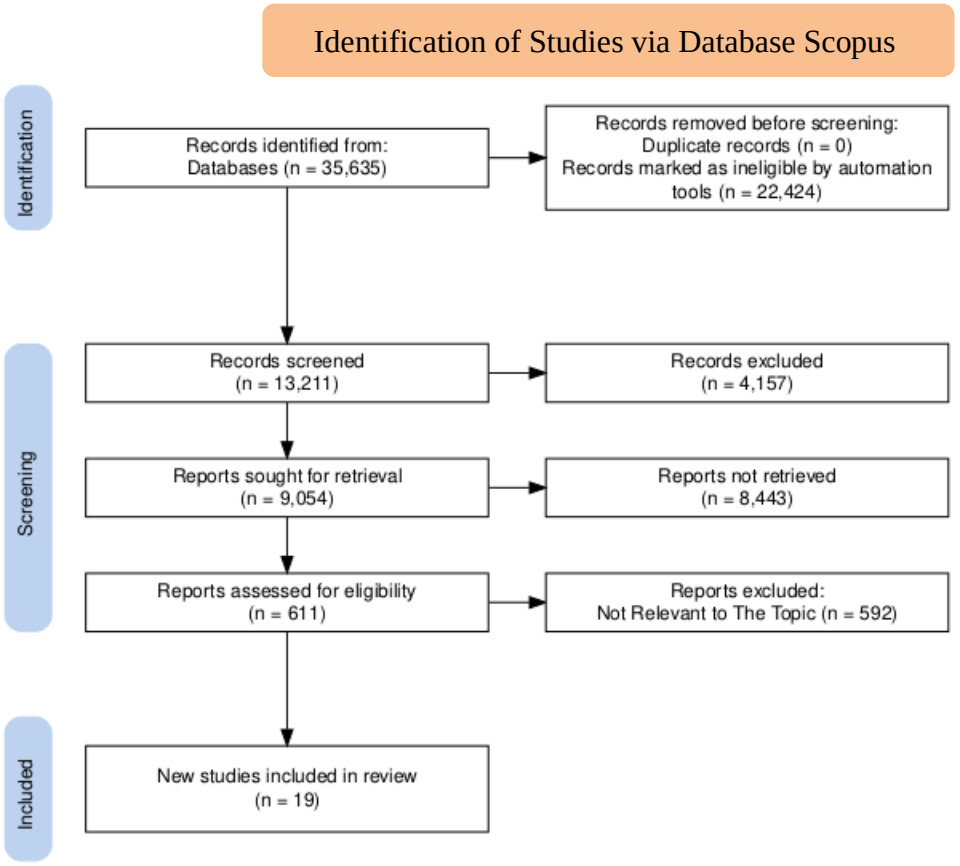

Figure 1. Literature Selection Prism Table (Source: Author's Research 2024)

From the PRISMA table presented, it can be seen that the screening process was carried out comprehensively to identify relevant new research through the Scopus database. There were a total of 35,635 articles identified from the Scopus database with previously determined SQ, but the majority, namely 22,424 articles, were excluded because they were not published in the last 5 years. After the first cleaning process, 13,211 articles were further analyzed to evaluate their suitability and relevance. Of these, 4,157 articles were excluded because they were not research articles, while 9,054 articles were analyzed further for retrieval. However, most of the articles (7,414) were not in the subject of social science, then 2 articles were not in English and 1,027 articles could not be accessed because they did not have open access. After further assessment of the 611 articles that were successfully retrieved, there were 592 reports that were declared not to meet the inclusion criteria and were excluded from the review. Ultimately, only nineteen studies were eligible and included in this review. Although there is a lot of information available, only a small portion meets the established inclusion criteria. This is because there are not many literature studies that discuss the implementation of archival technology in the Scopus database, and shows that the topic of this article is a topic that has never been researched by anyone before. This screening process has helped screen and identify the most relevant studies for inclusion in this literature review.

Benefits of Technology Implementation

Table 1. Results of Analysis of Benefits of Implementing Technology in Archive Systems (Source: Author's Research 2024)

No.	Benefits

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1.	Increased efficiency in archive management.
2.	Easier information storage and accessibility.
3.	Ability to search and access information quickly.
4.	Simplification of document and record management processes.
5.	Improve information security and reliability.
6.	Facilitate collaboration and information sharing between different departments or sections.

The application of technology in archiving systems provides many important benefits for organizations. One of the advantages is increased efficiency in managing archives. According to Jansen, Kalededinova, and Wolter (2022), using technology platforms such as Tradcloud in the supply chain can automate business processes, making archive management faster and more structured. With a digital document management system, searching and retrieving documents becomes easier, reducing the time spent searching for the information needed. Walker and Johnson (2023) also found that automation of the archiving process can minimize human error and increase data accuracy, making the information stored more reliable. In addition, technology makes it easier to store and access information. Kuklin et al. (2023) explain that technology allows for rapid data retrieval, which is very important in situations where decisions must be made quickly based on accurate data. Increased efficiency not only saves time but also increases employee productivity and the organization's ability to make decisions. Smith and Brown (2022) add that a technology-based archive management system allows for faster and more accurate access to information, thereby speeding up workflow and increasing the operational efficiency of the organization. Technologies like Tradcloud also allow for easier access to information, which is especially useful in the era of remote work. Jansen, Kalededinova, and Wolter (2022) noted that better access means information can be shared more easily between departments or teams, supporting better collaboration. Katsianis, Kotsakis, and Stefanou (2021) showed that technology simplifies the process of managing documents and records in archaeological projects, making it easier to store information but also to strengthen communication and collaboration within the organization. In addition, the application of technology in archiving systems can also improve the security and reliability of information. Kirilchuk et al. (2022) found that modern archive management systems are equipped with security features such as data encryption, access control, and audit trails, which allow organizations to track who accessed information and when it was accessed. With strong security, the risk of data loss due to physical damage or data theft can be minimized. Kesa (2023) added that technology allows for regular data backups so that important information remains safe even in the event of a system failure. This is essential to maintaining data integrity and ensuring decisions are made based on accurate information.

In the long run, implementing technology can also save an organization operational costs. By automating processes and reducing the need for physical storage, organizations can reduce spending on storage space, printed materials, and the labor required to manually manage records. Increased efficiency and productivity allows organizations to better allocate resources. Employees can focus on strategic tasks, rather than spending time on routine administrative tasks.

Overall, technology in records management offers many important benefits. From increased efficiency and access to information to improved security and collaboration, technology helps modernize records management. By understanding these benefits, organizations can make better decisions about how to manage their records. Organizations that want to stay relevant and competitive in the digital age need to consider adopting technology in their records management. With a strategic and planned approach, they can harness the full potential of

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technology to improve information management and achieve organizational goals.

Risks and Disadvantages of Implementing Technology in Archive Systems

Table 2. Results of Risk and Disadvantage Analysis of Technology Implementation in Archive Systems (Source: Author's Research 2024)

No.	Risk
1.	Potential loss of data due to technical failure or system outage.
2.	Vulnerable to cyber attacks and data leaks.
3.	Possible errors or incompatibilities in data conversion and migration.
4.	Depends on the service provider or technology vendor.
5.	High implementation costs related to hardware, software, and training.
6.	Potential resistance to change from users who are used to traditional systems.
7.	Possible decrease in productivity during the transition to the new system.
8.	Challenges in adapting the system to organizational needs and policies.
9.	Potential loss of traditional archival skills and knowledge.
10.	Risk of non-compliance with applicable regulations and privacy policies.

The application of technology in archiving systems carries several risks and disadvantages that need to be considered. Ihlebaek (2020) points out that one of the most significant risks is the potential for data loss. Data loss can occur due to various factors such as technical failure, human error, or cyber-attacks. For example, if a data storage system is damaged or crashes, important information stored can be lost forever. Errors in the process of migrating data from an old system to a new system can also cause data loss.

With increasing dependence on technology, the risk of cyber attacks also increases. Systems connected to the internet or internal networks can be easy targets for hackers who want to steal sensitive data or damage the system (Perwej et al., 2021). Cyber attacks can lead to information leaks, which not only harm organizations financially but can also damage their reputation.

Implementing technology in archiving systems often requires significant initial costs. These costs include the purchase of hardware and software, employee training, and system maintenance costs. For organizations with limited budgets, these costs can be a heavy burden. In addition, additional costs will arise along with technology updates and the need to upgrade the system (Sifat et al., 2023).

Opgenhaffen (2022) shows that the process of converting data from physical to digital formats or from one system to another is often at risk of error. Data that is not converted properly can result in lost or inaccurate information, which in turn can affect decision-making and organizational operations. In archaeological projects, digital workflows face practical problems in data entry and analysis, as well as fragmentation between analog and digital records, which can hinder data integration and accuracy (Opgenhaffen, 2022).

Dependence on third-party service providers is also a significant risk. If the service provider experiences problems such as bankruptcy or service disruptions, organizations can lose access to their data. This dependency creates a great risk because control of the data is in the hands of an outside party.

Challenges in employee adaptation are also one of the risks that must be faced. Employees will find it difficult to adapt to the new system, especially if they do not have a strong technical background. In healthcare, new electronic systems can disrupt professional workflows and patient care, as experienced by midwives who struggled with new systems, raising concerns about the competency and usability of the solution (Kearney, et al., 2023).

Implementing technology into records systems can also create a mismatch between expected improvements and actual outcomes. In electronic medical record systems, this mismatch can

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impact care delivery and lead to potential information loss (Ihlebaek, 2020). This highlights the importance of thoroughly evaluating new systems and ensuring that the technology adopted truly meets the organization's needs.

Overall, implementing technology into records systems carries many risks and pitfalls that must be taken seriously. From potential data loss and cyberattacks to implementation costs and dependency on service providers, organizations must be aware of these risks..

Challenges and Solutions

Table 3. Results of Analysis of Challenges and Solutions (Source: Author's Research 2024)

No.	Challenges	Solutions
1.	Resistance to change from users accustomed to traditional systems.	- Provide adequate training to users about the benefits and how to use the new system. - Involve users in the system planning and design process to gain their support. - Building an organizational culture that supports innovation and adaptation to change.
2.	High implementation costs related to hardware, software, and training.	- Carefully estimate budgets and conduct cost-benefit assessments to ensure wise investments. open source resources or cloud technology.
3.	Depends on the service provider or technology vendor.	- Conduct careful assessments of vendors and services offered. - Draft clear and detailed contractual agreements to ensure long-term service and support availability.
4.	Potential loss of traditional archival skills and knowledge.	- Develop training and development programs to update archival skills and knowledge. - Involve archives staff in the implementation process to ensure their knowledge is recognized and valued.
5.	Risk of non-compliance with applicable regulations and privacy policies.	- Ensure that implemented systems comply with relevant data security and privacy standards. - Conduct regular audits to ensure ongoing compliance with applicable regulations and policies.

Overcoming challenges in implementing technology requires a comprehensive strategy and solution approach. One of the main challenges is resistance from users who are accustomed to traditional systems. According to research by Nakayama et al. (2024), one of the main challenges is resistance from users who are accustomed to traditional systems. This is in line with McGuinness, Pouliakas, & Redmond (2023) who stated that many employees are comfortable with the old way of working and feel threatened by technological changes. To overcome this resistance, it is important to provide adequate training to users on the benefits and how to use the new system, as well as involve them in the system planning and design process. Research by Tsai et al. (2020) also confirms that ongoing training and technical support from the organization can reduce anxiety and increase employee acceptance of new technology. Another challenge is the high cost of implementation, including the purchase of hardware and software, employee training, and system maintenance costs. Walid, Joshi, and Choi (2024)

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suggest that the use of open-source resources or cloud-based technology could be a more economical alternative. This is in line with research by Volden (2019) which shows that cost-benefit analysis can help organizations ensure that their investments are well managed. In addition, the gradual implementation of technology can help manage costs better.

Dependence on service providers or technology vendors also needs to be considered. This can be a problem if the service provider does not meet expectations or there is a change in the services offered. Therefore, it is important to carefully assess the vendor and the services offered and create clear contractual agreements to ensure long-term support and service availability. Research by Martínez-Peláez et al. (2023) shows the importance of good working relationships between organizations and other stakeholders including service providers to ensure the success of technology implementation.

In the face of attacks on information systems, organizations need to adopt ready-to-use forensic capabilities. This step allows for effective post-incident investigations and improves overall data security. Daubner et al. (2023) emphasize the importance of strong security measures to protect against unauthorized access and maintain data integrity. Kirilchuk et al. (2022) also recommend strict data encryption standards and access controls to prevent unauthorized access and maintain information security.

The challenge of maintaining data quality and accuracy must also be addressed by implementing consistent metadata standards and conducting periodic data verification. Research by Al-Okaily, Teoh, and Al-Okaily (2023) suggests that the use of analytical technology to aggregate and analyze data can help maintain information quality. Sari (2023) adds that staff involvement in the data management process can increase accountability and attention to data quality.

By understanding these challenges and implementing appropriate solutions, organizations can ensure the success of technology implementation in their records systems. This also involves a careful assessment of the organization's needs and goals, selection of appropriate technology, and effective management of technology adaptation. As explained by Wilkins et al. (2021), increased collaboration between agencies is needed for effective disaster loss reporting, with opportunities to improve data collection and reporting identified. A strategic and comprehensive approach to addressing these challenges will help their records management more effectively in the digital age.

Conclusion

The implementation of technology in archive management brings many important benefits, such as increasing efficiency, facilitating information access, and improving data security. However, there are also some risks and challenges that need to be overcome for the successful implementation of archive technology. This study shows that there is still much room for further research on the use of technology in archives.

On the one side, the findings of this study help organizations in better managing the implementation of archive technology. By understanding the benefits of technology, organizations can maximize their benefits while reducing risks and overcoming various challenges that may arise. On the other side, this study also adds to our knowledge of archive management and technology and paves the way for further research.

However, this study has several limitations. First, only articles published in the last five years were used, and all data were taken from the Scopus database. Second, this study did not consider contextual factors that may affect the implementation of technology in various organizations. Thus, the results should be viewed with caution and may not apply to all situations.

For future research, it is recommended that archive technology be explored in various

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industries and contexts. In addition, studies that monitor the long-term impact of archive technology are also urgently needed. Research can focus on developing specific strategies to address challenges in technology adoption, as well as evaluating the effectiveness of various approaches used by organizations.

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Authors' Contributions

All authors have contributed to the final manuscript in terms of conceptualization, methodology, analysis, original drafting, review, and editing. They have also read and approved the published version of the manuscript

Conflict of Interest

All authors have no conflict of interest related to this study.

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Appendix 1

Data Extraction Results (Source: Author's Research 2024)

Studies	Methodology	Main Findings
The use of cloud technology for sustainable performance of international supply chains: A case study by Jansen, Kaledinova, & Wolter (2022)	- Case study methodology - Qualitative data - Small number of research units (two companies) - Intensive data generation through semi-structured interviews and company visits - Selective sample - Studied the companies as a whole - Triangulation approach combining different methods and sources.	- The use of IT platforms like TradeCloud in supply chains can automate business processes and improve supply chain management and working capital. - IT platforms can increase the efficiency and agility of business processes by reducing manufacturing and delivery times. - IT platforms can have both financial benefits (e.g. reduced costs, improved working capital) and non-financial benefits (e.g. optimized flows, improved customer satisfaction) for companies in the supply chain.
Agriculture damage data collection: A model for reconstructing comprehensive damage dynamics by Faiella (2020)	The methodology involves: 1) Analyzing international policies and guidelines for agriculture damage data collection, with a focus on the Sendai Framework; 2) Investigating existing practices and case studies of agriculture damage data collection to assess their compliance with the policies and guidelines; 3) Analyzing examples of existing damage and loss assessment forms used by various states and organizations; 4) Proposing a relational database model as a comprehensive conceptual model for agriculture damage data collection, based on the analysis of policies, guidelines, and existing	1) The database allows tracking the evolution of damage over time and reconstructing the damage dynamics; 2) The data can be used to construct "damage-dysfunction matrices" to evaluate potential dysfunctions and damage to the agriculture sector; 3) The model considers the temporal and spatial characteristics of damage, allowing analysis of when and where damage occurred and how it evolved; 4) The database is designed to represent not just immediate, direct physical impacts, but also indirect and systemic consequences due to interdependencies in the agriculture sector; 5) The database is presented as a tool to improve traditional

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	practices; 5) Designing the relational database model to capture the temporal and spatial characteristics of damage, as well as the inter and intra-dependencies within the agriculture sector.	approaches to data management, supporting both data collection and analysis.
Reconfiguring the 3D excavation archive. Technological shift and data remix in the archaeological project of Paliambela Kolindros, Greece by Katsianis, Kotsakis, & Stefanou (2021)	- Developing a digital workflow between 2003-2009 to facilitate 3D site recording and post-excavation engagement - Using the "Excavation Unit" as the central element, a subdivision of a depositional context or layer - Employing ESRI ArcGIS with ArcScene for 3D visualization, a personal geodatabase for storage, and Microsoft Access for data entry - Analyzing, digitizing, and modeling the excavation recording sheets into a GIS-based data model.	- Practical difficulties in feeding data into the system, using it for analysis, and preserving its usability over time as technology changes rapidly - The excavation archive remaining partially analog/digital and fragmented, leading to the need to use external applications for data aggregation - Challenges in keeping up with technological change, both institutionally and operationally - The need to maintain the entire digital creation workflow, including raw data and intermediate processing steps, to be able to identify and correct mistakes or reprocess data in the future as new technologies emerge.
Challenges and opportunities for Sendai framework disaster loss reporting in the United States by Wilkins, et al. (2021)	The methodology involved: 1) Identifying which U.S. data relates to the 38 Sendai Framework indicators, 2) Collecting this data from relevant Federal agencies involved in disaster management and recovery, and 3) Aggregating the data and reporting it to the UNDRR's Sendai Monitor tool, after	- The Sendai Framework provides a structure for countries to measure progress in reducing disaster losses, which can inform national disaster risk reduction strategies. - While the Sendai Framework has improved cooperation among U.S. federal agencies in collecting and tracking disaster loss data, challenges remain in

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	clearance from the U.S. State Department.	reporting these losses. - The paper identifies opportunities to improve disaster loss reporting in the U.S. based on the authors' experiences collecting and reporting data to the Sendai Monitor.
Woman-centred care and integrated electronic medical records within Australian maternity settings: Point prevalence audit and observational study by Kearney, et al. (2023)	The study used a multi-method approach, including: - Documentation audit: Reviewing 400 electronic medical records at two time points after implementation of the integrated electronic medical record (ieMR) system - Observation: Observing the behavior and interactions of 45 midwives (16 from site 1 and 29 from site 2) providing care in antenatal, birthing, and postnatal settings, for a total of approximately 50 hours.	- Midwives had difficulty navigating and using the electronic system, including logging in and accessing certain features - The electronic documentation process disrupted midwives' interactions with women and their ability to provide woman-centred care - Midwives expressed concerns about their competence with the new technology and used workarounds to manage the new documentation processes.
Lost in translation-Silent reporting and electronic patient records in nursing handovers: An ethnographic study by Ihlebaek (2020)	The study used ethnographic fieldwork, including 5 months of participant observation and 9 semi-structured interviews with registered nurses in a Norwegian hospital cancer ward.	The paper discusses the research results relating to the implementation of electronic patient records in hospitals, highlighting that the optimistic expectations around improved quality, safety, and efficiency do not always align with the actual implementation and use of these technologies in practice. The paper suggests that the implementation of electronic patient records can influence the administration of care, relationships between clinicians, professional autonomy, and clinicians'

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		ability to maintain a shared understanding of patients, potentially leading to a loss of information and professional knowledge.
Addressing insider attacks via forensic-ready risk management by Daubner, et al. (2023)	- Defining a domain model that extends the ISSRM domain model with forensic readiness concepts - Defining metrics to evaluate the forensic readiness level - Describing a process to instantiate the FR-ISSRM approach	- The paper presents a systematic approach called FR-ISSRM to address insider attacks by introducing forensic-ready capabilities in software systems. - The FR-ISSRM approach is demonstrated through three case studies covering typical insider attacks. - Forensic-ready systems are shown to be a viable approach to enable post-incident investigation of insider attacks, especially in cases where security controls are bypassed.
Ensuring the security of an automated information system in a regional innovation cluster by Kirilchuk, et al. (2022)	The study used methods of generalizing the observation of the phenomenon of informatization in economic processes, analysis and synthesis, global synergistic effects, previously described in open publications of individual authors of the paper.	- The security of an automated information system in a regional innovation cluster in the transport industry involves protecting it from interference, theft, modification, or destruction of its components. - The purpose of security measures is to protect the owner and legitimate users from material or moral damage due to unauthorized access or illegal use of privileges. - Comprehensive information protection of the automated information system requires the use of SIEM and DLP systems.
Archives in action. The impact of digital technology on archaeological recording strategies and ensuing open	- The methodology used is the "Tradition in Transition" framework, which combines praxeological theory	The paper discusses how the implementation of digital technology, such as 3D scanning and digital photography, has impacted

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research archives by Opgenhaffen (2022)	(such as the chaîne opératoire approach) with reflexivity. - The framework treats the archive as an "information artefact" and uses STS (Science and Technology Studies) methods, including "infrastructural inversion" to bring hidden practices behind digital infrastructures to the surface. - The study also uses an autoethnographic approach to create awareness of the researchers' roles and how this affects data collection, curation, and interpretation, and to record "paradata" (the intellectual and personal information related to the documentation process).	archaeological archiving practices. It analyzes how the affordances of digital devices have changed the ways practitioners collect and record archaeological data, and how this is reflected in the design and organization of the digital archive. The paper highlights that research into the impact of digital technology on archiving practices in research environments has received less attention compared to other topics like data reuse and public participation, and presents the Tracing the Potter's Wheel project as a case study to illustrate how the digital archive reflects the complex interplay of current and ancient practices through its layered design and multiscalar navigation.
Information asymmetries: recognizing the limits of the GDPR on the data-driven market by Waerdt (2020)	This is a conceptual and theoretical paper, not an empirical study with a methodology.	- Information asymmetries between consumers and data-driven companies are a serious problem that the GDPR is unable to adequately address. - The GDPR fails to mitigate the information asymmetries because it does not account for the unique characteristics of the data-driven business model, leading to an insurmountable lack of transparency for consumers. - This vulnerable position of consumers is an inherent consequence of the magnitude of information asymmetries in the data-driven market.

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Organic transformation of ERP documentation practices: Moving from archival records to dialogue-based, agile throwaway documents by Nakayama, et al. (2024)	Exploratory case study with semi-structured expert interviews and grounded theory-inspired data analysis.	There has been a shift in ERP documentation practices from formal, retrospective approaches to more informal, dialogue-based, and "throwaway" documents, including audiovisual recordings and informal emails. The paper redefines documentation to include this broader range of unstructured, searchable information across different media.
We're implementing AI now, so why not ask us what to do? How AI providers perceive and navigate the spread of diagnostic AI in complex healthcare systems by Gillner (2024)	- Qualitative methodology - Primary data source: One-on-one interviews with 14 AI provider companies (17 interviews, average length 50 minutes, conducted April-December 2022) - Interview partners selected based on strategic role - Semi-structured interview guide covering patient access, product value proposition, user interactions, and strategic goals - Data triangulation: - Additional interviews with adopters (pharmaceutical company, hospital) - Online focus group with 6 physicians experienced in using AI-enabled diagnostics - Archival data (blog posts, public guidance, white papers/articles)	- AI providers perceive complex challenges in the sociocultural, technological, and institutional subsystems of healthcare when trying to promote the spread of AI-enabled diagnostics. - In response, AI providers have developed emergent practices of stealth science, agility, and digital ambidexterity to navigate the complex healthcare system and embed their technology across organizations. - AI providers have developed these self-organizing practices to increase their adaptability and latitude in spreading AI across variable implementation contexts, rather than seeking to exert direct control.
Scan to BIM for the digital management and representation in 3D GIS environment of cultural	- Historical analysis - 3D surveying and data processing using photogrammetry (SfM-MVS) and terrestrial	Implementation of technology in archive systems involve the development of a Spatial Information System (SIS)

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heritage site by Pepe, et al. (2021)	laser scanning (TLS) - Identification and modeling of characteristic elements - Digitization of semantic, documentary, and graphic information	that integrates a multidisciplinary approach and a relational database management system (RDBMS) to manage and link heterogeneous information associated with 3D models of cultural heritage objects. The key aspects are the use of stratigraphic units as common identifiers to organize the data in the RDBMS, and the association of the 3D modeled objects with unique codes that serve as primary keys in the database.
Blockchain technology as a new driver in supply chain by Černý, et al. (2021)	The study presents a conceptual analysis of a traditional supply chain model and a blockchain-based supply chain model, without an empirical evaluation.	- The paper introduces the issues of blockchain technology and its application in the supply chain, presenting two models: the traditional supply chain model and a supply chain model based on blockchain technology. - The paper identifies the most common problems of the traditional supply chain, such as insufficient traceability, lack of real-time information, and too many paper documents, which can lead to fraud and disruption, and shows how blockchain technology can address these problems. - The paper notes that the authors relied only on theoretical knowledge and did not examine the real impacts and obstacles of implementing blockchain in the supply chain, and identifies risks and challenges that need to be addressed, such as high

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		investment costs, getting all parties involved, and the time needed for implementation.
From survey to integrated digital documentation of the cultural heritage of museums: A protocol for the anastylosis of archaeological finds by Raco (2023)	The methodology involves a multi-step workflow including: - 3D surveying and scanning of the throne fragments and physical model - Photographic survey of individual fragments - Registration of data models and creation of a 3D database - Photogrammetric modeling of the fragments - Digital simulation of fragment positioning and assembly - Development of a digital support model based on the fragment and physical model data - Validation and geometric control of the digital models	- The physical 3D printed models allow for annotation and dimensional verification that is not possible on the original fragile artifacts. - The digital models and physical prototypes are intended to be accessible not just to researchers and experts, but to a wider range of stakeholders. - The protocol aims to provide a response to the challenges of defining digital documentation procedures to support conservation, restoration, and museum display of diverse cultural heritage. - However, challenges remain in terms of the specialized skills required and the long-term usability, archiving, and maintenance of the digital information (Digital Cultural Heritage Objects).
Climate change and COP26: Are digital technologies and information management part of the problem or the solution? An editorial reflection and call to action by Dwivedi, et al. (2022)	The paper is an editorial that presents expert opinions and does not describe a specific research study or methodology.	- Digital technologies can offer solutions to climate change, but they also have negative impacts in terms of waste, resource usage, and CO2 emissions. - There is a limited contribution from a wider and more informed multiple perspective context on the role of digital technologies in addressing climate change. - The transition to net zero requires significant changes at a societal and industrial level, and governments and

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		corporations are increasingly turning to technological innovations to meet net zero emission targets.
Pathways for a future cadastral system: A socio-technical approach by Krigsholm, Riekkinen, & Ståhle (2020)	- Reviewed landscape pressures and niche level innovations from literature – Conducted two focus group discussions with 4 land administration professionals to characterize the regime and develop alternative transition pathways.	- The study uses the multi-level perspective (MLP) framework to explore potential future pathways for the Finnish cadastral system. - Three alternative transition pathways are developed: (1) a cadastral system under digital transformation, (2) differentiating urban and rural cadastral systems, and (3) a cadastral system facing new data management challenges. - The study provides new insights into the future of cadastral systems and land administration by considering a broader range of societal dynamics and challenges beyond just technological innovations.
The potential of disaster digital archives in disaster education: The case of the Japan disasters digital archive (JDA) and its geo-location functions by Gerster, et al. (2022)	- The methodology involved a two-step Google form-based questionnaire with 50 participants. - Participants were asked to either visit a disaster-related site or participate from home, and find information in the JDA. - Participants were provided with instructions on how to use the JDA's map-related functions. - The authors conducted follow-up interviews with 4 participants to clarify issues raised in their responses.	The research results suggest that the geo-location functions of the Japan Disasters Digital Archive (JDA) can allow visitors to retrieve information about specific disaster-affected sites and contribute to their understanding of local risks. The geo-location functions could also promote self-guided tours of disaster-affected areas, which could be a cost-saving option for museums and visitors, especially during the COVID-19 pandemic. The study also contributed to a better understanding of using

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		virtual research methods in social science research, though some challenges remained compared to in-person workshops.
Leveraging semantic context to establish access controls for secure cloud-based electronic health records by Walid, Joshi, & Choi (2024)	- The system has a multi-layer architecture with layers inside and outside the organizational boundary. - It uses user-id/password-based authentication and attribute-based access control (ABAC). - It employs the Revocable, Searchable Attribute-Based Encryption (RSABE) scheme with Ciphertext Policy-Attribute Based Encryption (CP-ABE). - It incorporates various functions into a knowledge graph designed considering the HIPAA Act. - It assigns some computations to the CSP by splitting the user's secret key, following the edge computing principle. - It analyzes data at the organizational boundary before sending it to the cloud, incorporating a data access control technique.	- The proposed EHR system uses a knowledge graph to handle heterogeneous data, improving data retrieval performance and clinical decision-making. - The system leverages SPARQL, which is more efficient than SWRL for querying patient data, improving system performance and scalability. - The system delegates partial computing to the cloud, improving scalability, performance, and cost-efficiency, while reducing the burden on the client-side.

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