

Article

Investigating the Application of Digital Tools for Information Management in Financial Control: Evidence from Bulgaria

Zhelyo Zhelev *  and Silviya Kostova 

Department of Control and Analysis of Economic Activities, Tsenov Academy of Economics,
5250 Svishtov, Bulgaria; s.kostova@uni-svishtov.bg

* Correspondence: zh.zhelev@uni-svishtov.bg

Abstract: This paper discusses the application of digital information management tools in the context of financial control. In Bulgaria, such research is innovative as it is the first time that digital transformation in crucial financial control institutions, which influence the formation of the revenue part of the state budget and the spending of public funds, has been studied. The study aims to answer the research question of to what extent the application of digital tools in financial control improves its effectiveness. It analyses how modern technologies improve the efficiency and accuracy of information used in financial control institutions. The authors examine the impact of digital tools, such as database management systems, business analytics platforms, and electronic document management tools, on collecting, analyzing, and managing financial and non-financial information. The study uses descriptive statistics and a correlation analysis, which significantly contributes to establishing the relationship between implemented digital tools and improvements in financial control procedures. The results show that despite the conditions created for digitalization in financial control institutions, digital tools are used to a limited extent in the information management process. The study emphasizes the need for continuous investment in digital technologies and training to maximize the benefits of their application in financial control.

Keywords: digital tools; information management tools; financial and non-financial information; financial control



Citation: Zhelev, Zhelyo, and Silviya Kostova. 2024. Investigating the Application of Digital Tools for Information Management in Financial Control: Evidence from Bulgaria. *Journal of Risk and Financial Management* 17: 165. <https://doi.org/10.3390/jrfm17040165>

Academic Editor: Thanasis Stengos

Received: 4 March 2024

Revised: 2 April 2024

Accepted: 15 April 2024

Published: 17 April 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The research includes the impact of digital tools on the management of information when performing financial control activities. The assessment of information plays a crucial role in managing the elements of the control process in institutions (Otero 2015). It includes a variety of policies and procedures that ensure legality and expediency by assessing the compliance of activities and operations with regulatory requirements at various administrative levels. For this purpose, crucial and critical points in the organization's business processes are identified (Onyshchenko et al. 2023). In order to achieve an adequate assessment of information, it is essential to study, identify, and rank the external and internal risks to be reduced to an acceptable level to manage them effectively.

Information risk management is a crucial tool supporting control procedures and decision-making in audited organizations. Proper application of these tools ensures reliability, security, and easy access to financial and non-financial information by extracting and analyzing it. Attention is directed to the creation, storage, and processing of information through various technologies and platforms, such as databases, cloud storage, content management systems, and others (Yusif and Hafeez-Baig 2021).

In the context of the development of the digital economy, the introduction of digital tools in the control process allows economic entities to automate the processes of collection, processing, and analysis of financial and non-financial information (Dube et al. 2023). Emphasis is placed on opportunities for economic growth and improved resource efficiency

through improved infrastructure for processing structured and unstructured data that build on the best operations in the digital economy (European Commission 2020). The application of algorithms, technologies, and computational tools combines the advantages of a digital infrastructure and advances the application of artificial intelligence, blockchain technologies, and the Internet of Things (IoT).

Combining the advantages of digital tools and the need to automate business processes requires the creation of data management software applications and intelligent analytical tools (Lyons and Kass-Hanna 2021). This facilitates the application of algorithms and artificial intelligence to analyze financial and non-financial information to identify unusual transactions, potential fraud risks, and more (Morgan et al. 2019). To increase their effectiveness, these technologies should be combined with tools for data encryption, protocol encryption, role-based database access, two-factor authentication, and more (Musa 2023). The purpose is to protect information, create backup copies of financial information, enable rapid data recovery, and control access to financial information.

In summary, combining different types of digital tools leads to practical implementations that improve the control procedures' implementation mechanisms. This, in turn, will increase the effectiveness of financial discipline and the security and reliability of information.

The authors' main academic interests are in the fields of financial control and auditing. The authors collectively focus on the use of digital tools in control processes to improve the collection, processing, and use of information resources in financial control institutions. To achieve this goal, the authors formulate the following hypotheses:

Hypothesis 1. *Significant application of digital tools in financial control improves process efficiency, reduces human error, and leads to higher adaptability to changing dynamic economic conditions.*

Hypothesis 2. *Financial control institutions optimally use digital information management tools, thus increasing the utility of the control's impact on economic entities.*

To address this issue, we aim to answer the research question (RQ) "To what extent does implementing digital tools in financial control improve its effectiveness?" It analyses how modern technologies improve the efficiency and accuracy of information used in financial control institutions.

The article is structured as follows: Section 2 presents an overview of the academic literature on information management, the digital tools used, and their impact on forms of control. Section 3 describes the methodology used in the research to analyze the relationship between information management procedures, their association with the benefits of digital tools, and the effect on the control process. Section 4 contains the results of the correlation analysis performed on the relationship between information resource management processes, types of digital tools, and forms of control. Section 5 discusses the study's results to confirm or reject the hypotheses put forward by the authors. Finally, conclusions are summarized in Section 6.

2. Literature Review

Information is crucial in the control system; therefore, control authorities should apply digital tools for all primary and secondary control information activities. Information management plays a crucial role in minimizing risk in financial control. The most commonly used information management methods cover the volume of a database, its processing and storage, and appropriate technical tools to manage the information.

2.1. Information Management Methods

Information Management Systems (IMS) include software and hardware solutions that are specifically designed to store, process, and deliver information (Li 2019). Through them, effective information management is facilitated, which contributes to reducing the

risk of data loss, misuse, and more (Kuntadi et al. 2023). IMS can automate many tasks related to data collection and processing, which includes storing financial documents and automatically extracting data from various sources, such as bank accounts, invoices, and others. It reduces the risk of human error and ensures greater accuracy and reliability of the data (Suleiman and Salman 2023). Its application contributes to better analytical reporting and the adequate use of analytical tools and technologies, with the aim of identifying potential risks and opportunities for improving financial activity in companies (Liu et al. 2024). This way, unification with the various regulations and standards related to financial activity is achieved. It includes automating the data collection and reporting processes required to comply with local legislation and international standards (Olewi 2023). Information management systems play an essential role in control activity, helping organizations to identify, assess, and manage risks in their financial activities more effectively and efficiently. These systems can be integrated with others that cover operational risk management, cyber security, and the automated detection of unusual transactions, data discrepancies, or other signs of financial impropriety.

The method of encrypting and protecting data covers sensitive information using cryptographic techniques by an authorized user (Keshta et al. 2023). It helps reduce the risk of illegitimate access to financial information (Pu et al. 2020). In this way, data are protected by transforming them into a format that can only be decoded by individuals with a special key or password. Encryption ensures the protection of data during their transfer over the network as well as during their storage, thereby reducing the risk of unauthorized access, hacker attacks, and other forms of cybercrime (Möller et al. 2020). In addition, modern financial organizations implement complex security policies that include not only encryption but also two-factor authentication, regular vulnerability assessments, and strict access management procedures (Malina et al. 2018). In the context of financial control, this method provides accuracy, reliability of information, and a secure basis for making informed decisions. It helps to increase confidence in business organizations and improve the operational efficiency of the actions of the control bodies.

Identification and access management support tight control over information access rights, reducing the likelihood of unauthorized access or misuse (Aleksandrova et al. 2023). It includes establishing user profiles, assigning roles, and restricting access rights to the “need to know” principle. Implementing Identity and Access Management (IAM) systems is critical for creating a secure and controlled environment. These systems allow organizations to manage user identities and access rights to systems and data in a centralized and efficient manner (Sharma et al. 2016). It provides dynamic management of roles and rights, automation of access assignment and revocation processes, and provision of detailed reports on user actions. To achieve this, the principle of least privileged access, which plays a vital role in information management, is often applied (Benantar 2005). It ensures that users are given only the most necessary rights to perform their tasks and that the potential risk of internal (Lambovska and Yordanov 2020) and external threats is minimized.

Data backup and recovery systems are essential to ensure the integrity and availability of critical information, especially in situations of unforeseen events, such as technical malfunctions, human errors, or cyber-attacks (Kang et al. 2021). In the context of financial control, reliable data backup and recovery systems should be considered. Financial data are the basis of strategic planning and decision-making in any company (Murugan and T 2023). They require a strategic approach that includes regularly backing up important data and storing it in safe locations, both locally and in the cloud. In this regard, operational efficiency and continuity of business processes should be maintained.

Backup methods range from traditional devices to modern solutions (Browmik et al. 2023). Cloud services offer significant advantages, including elasticity, scalability, and availability, allowing regulatory institutions to store large volumes of data at a reasonable cost and ensure their integration (Kumar et al. 2024). Backups must be created regularly and automatically to minimize the risk of losing up-to-date data.

In conclusion, investing in reliable data backup and recovery systems is a security measure and a fundamental component of sustainability in digitalizing information management. This helps optimize the risk assessment process and prepare data recovery plans for the control systems. In this context, systems protect valuable financial data from loss and provide the basis for effective and strategic decision-making.

Data monitoring and analysis systems are increasingly becoming vital tools for positive impact by financial control institutions. They provide an opportunity for the continuous monitoring of financial indicators and in-depth analyses supporting strategic decision-making and identifying opportunities for optimization (Cornwell et al. 2023). Modern monitoring and analysis systems offer an integrated approach that combines data from various sources—financial reports, operational systems, and external databases (Berger and Boot 2022, Financial Intermediation Services and Competition Analyses: Review and Paths Forward for Improvement). It allows the financial control authorities to obtain a comprehensive picture of the audited organizations and, on this basis, justify their findings.

Data monitoring and analysis systems actively monitor events and transactions, enabling the fast detection of unusual or potentially dangerous activities (Berger et al. 2016). They help reduce the risk of fraud, abuse, or other financial crimes. Using these information management methods helps ensure the security of financial information and contributes to the efficiency and reliability of financial control processes. They provide a basis for achieving greater transparency and trust in the organization's financial activity.

One of the key advantages of these systems is the ability to provide real-time updates, which are especially valuable in rapidly changing market conditions. The automation of data collection and processing reduces the likelihood of errors and frees up valuable resources that can be redirected to other activities. For this purpose, advanced analytical tools such as Artificial Intelligence (AI) (Aleksandrova et al. 2023) and Machine Learning (ML) (Zarkova et al. 2023) may be included to help identify patterns and trends.

In conclusion, data monitoring and analysis systems support technology integration and privacy management and reduce the risk of data obfuscation and loss. They enable the effective management of current operations, predict future trends, and make informed strategic decisions. These systems can become the basis for sustainable competitive advantages and financial success in continuous development and change.

2.2. Digital Tools for Information Management

In the digital transformation era, digital information management tools have established themselves as a fundamental component for the efficiency and transparency of financial control. These tools combine functionalities to collect, analyze, manage, and share information, enabling organizations to maximize operational efficiency and improve decision-making. The main applications are artificial intelligence, extensive data analysis, the automation of robotic processes, and blockchain technology (Almaleeh 2021). These tools are also reviewed by Tiberius and Hirth (2019) through the prism of their influence on the development and improvement of the control activity.

Microsoft Office Suite 365 is one of the most widely used software packages in business environments (Dubin 2024), providing applications in various aspects of financial control. The suite of tools, including Excel, Word, PowerPoint, Access, and Outlook, provides a powerful platform for information management, analysis, and the presentation of financial data (Otsubo et al. 2016). The application of Microsoft Office Suite within Bulgaria's financial control framework is an example of how traditional software solutions can be used to support complex control procedures. The effective use of these tools can significantly increase the accuracy, efficiency, and transparency of financial operations, thus improving financial control and information management.

In today's dynamic business environment, digitization is critical in optimizing management processes and improving financial reporting. In this context, integrated enterprise resource planning (ERP) and customer relationship management (CRM) systems stand out as powerful information management tools that offer significant opportunities for

financial control (Hansen et al. 2023). In ERP systems, the entire information system can be integrated, which covers the processes of collecting, processing, and analyzing information and linking it with the administrative activities of managing control institutions related to finance and human resources (Fernandez et al. 2017). The application of ERP in the context of financial control allows the automation of the forms of control, improves the accuracy of the findings in the final documents, and reduces the time for carrying out control procedures.

Although CRM systems focus primarily on customer relationship management, customer data collection, and customer behavior analysis, they can provide control bodies with a base for outbound information (Boem et al. 2023). CRM systems can provide essential data that can be analyzed to identify trends in financial and non-financial information and improve the planning and scope of control procedures. In Bulgaria, the use of CRM systems to support financial control is growing by mainly applying the process of risk management and cyber security and protecting personal data in financial control institutions.

Integrating ERP and CRM systems offers opportunities to create synergies to improve financial control significantly. Their integration allows financial control institutions to have a comprehensive view of the operations of economic entities, which facilitates the making of informed decisions based on accurate and updated information (Hendricks et al. 2007). In Bulgaria, where the business environment is becoming increasingly competitive, integrating data from different sources and analyzing it for financial analysis and control is essential for effective information management.

Artificial intelligence (AI), data encryption, hashing and caching technologies, and extensive database processing software are promising digital tools for modern information management and play a vital role in effectively implementing control procedures. Artificial Intelligence (AI) is widely used in financial control, providing tools to automate routine tasks, analyze large volumes of data, and identify anomalies in financial statements that have traditionally required significant human resources (Jatobá et al. 2023). AI systems can train models to predict future financial trends and optimize the time to execute control procedures and risk management. In Bulgaria, more and more institutions recognize the potential for AI to improve risk management and introduce more secure systems to protect information resources.

Data security is essential to financial control, especially in the context of growing cyber security threats. Data encryption technologies protect financial and non-financial information during storage and transfer (Chen and Wang 2023) while hashing is used to verify the integrity of data without the need to reveal its contents (Wan et al. 2022). Caching improves the performance of financial control systems by providing fast access to frequently used information. These technologies are vital to maintaining high security and efficiency in data processing.

In the era of “Big Data”, the ability to efficiently process and analyze voluminous financial databases is critical for supervisory institutions (Kang and Zhong 2023). Big database software solutions enable organizations to extract, transform, and load (ETL) large volumes of data for analysis. They support complex analytical queries in real-time, which helps regulators identify trends, analyze financial performance, and make informed decisions. In Bulgaria, the application of these technologies is expanding, with financial control institutions looking for ways to use them in gathering evidence and preparing reports.

In conclusion, the application of the mentioned digital tools is primarily related to the processing of large databases to achieve a higher level of efficiency, accuracy, and optimal planning of control procedures. These technologies offer significant opportunities for increasing information resource efficiency, reliability, and security. By integrating these systems, financial control institutions can modernize their activities and increase public trust.

2.3. Forms of Financial Control and Digital Tools for Information Management

As technology advances, digital tools are changing traditional information management activities—collecting, processing, and protecting information (Biemans 2023). Digital transformation significantly impacts the characteristics of preliminary, current, and ex-post forms in financial control and auditing (Kostova 2012). In verification, as a form of preliminary control, digital technologies facilitate planning and risk assessment processes through the automated analysis of large volumes of data, allowing earlier identification of potential problems and irregularities. It allows organizations to implement corrective measures even before control procedures are performed, thereby increasing efficiency and reducing the likelihood of errors. At the same time, digital tools offer greater flexibility and adaptability in planning control procedures, which is particularly important in a dynamically changing business environment (Zhang et al. 2023). The transformation is critical in optimizing financial control processes, including inspection, audit, monitoring, and supervision.

Digitalization transforms the information management activities of monitoring and evaluating financial processes and results in current and subsequent control (Fang and Ju 2024). Financial control institutions can continuously monitor their activities using modern analytical systems and real-time data tools, facilitating the rapid detection and addressing of anomalies or trends (Dorogovs et al. 2013). It enables immediate reaction and process correction, which are critical to maintaining financial stability and regulatory compliance. In the long term, tracking is influenced by digital transformation by improving methods for analyzing historical data and trends, which supports strategic planning and informed management decision-making. As a result, digitization optimizes financial control processes and contributes to greater transparency, accountability, and sustainability in financial systems.

Organizations can collect large volumes of data quickly and accurately through automated document management systems and software. It speeds up the information-gathering process and reduces potential errors and inaccuracies. As a result, financial control becomes more reliable, which is especially important when performing inspections and audits (Grosu et al. 2020). Integrating innovative software solutions enables the effective management of collected data and their analysis and interpretation. Database management systems and analytical platforms enrich the process of financial control and analysis of financial and non-financial information, providing reliable evidence and supporting informed decision-making. It is vital for auditing and monitoring, where accuracy and access to up-to-date information are critical to success.

Data security is becoming a priority for all regulatory agencies as cyber threats grow. Cyber security solutions, data encryption, and backup are just some tools that help protect sensitive information from unauthorized access or loss. These security measures are fundamental to the implementation of monitoring and supervision. Organizations' technological innovations contribute to greater efficiency, transparency, and security in managing financial information (Kerr et al. 2023). Despite the challenges associated with technological adaptation, the potential to improve supervision, audit, monitoring, and inspection processes is significant.

However, continued investment in digital technologies and training to maximize the benefits of their application in financial control remains necessary. The study's focus is on contributing to the possibilities for more active use of digital tools to improve control activities in the public sector of the Republic of Bulgaria.

3. Materials and Methods

The present study analyzes the application of digital tools in the processes of financial control in Bulgaria's financial control institutions, affecting the formation of the revenue part of the state budget and the expenditure of public funds. Based on a survey, the research aims to establish which digital tools are actively used in data collection, processing, and protection practices and their effectiveness in managing information within financial control.

The survey was distributed to over 450 specialists working in financial control institutions at the national level—the National Revenue Agency, the Customs Agency, the State Audit Office, and the State Financial Inspection Agency. The first two are the primary revenue administrations, collecting 80% of the total revenue in the state budget. The State Audit Office and the State Financial Inspection Agency inspect 90% of organizations that dispose of budget funds. The aim is to get an idea of the current state of the technological integration of digital tools for implementing control procedures. The questions are formulated to reveal how digital tools support the stages of information collection, processing, and protection and how they affect the overall effectiveness of financial controls.

In the study, we investigated three groups of nominal variables: digital tools, elements of the information management process, and forms of control. The choice of the correlation relationship is justified by the fact that the whole study does not look for a correlation between an outcome phenomenon that is an outcome and, respectively, correlating factors that influence it. The idea was to look for how strong the relationship is between nominal independent variables. The respondents' answers were transformed into (1) and (0), depending on the degree of application on the research parameters, to apply Kendall's method. Then, the values and interrelationships between nominal variables are included in the analysis. Non-parametric data were transformed into parametric data to perform a qualitative analysis. Only certain coefficients, where we have a high degree of statistical significance, are offered to the analysis.

Kendall's correlation analysis was applied to the analysis of the collected data to identify statistically significant relationships between the use of digital tools and the improvement of financial control processes. The method was chosen because of its ability to analyze relationships between ordinal and nominal variables, which is particularly suitable for handling survey response data. The relationship between the various indicators is presented, and their interrelationship is explored. Through the correlation analysis, the authors sought to derive the relationships between the respondents' attitudes toward digital tools and the analysis of their influence on the optimization of financial control.

The data show a high degree of statistical significance between the implementation of digital tools and the improvement of critical aspects of financial control, including the efficiency of information collection, the accuracy of data processing, and the reliability of information protection measures. These data support the hypothesis that the technological integration of various digital tools has an essential role in the adaptability and optimization of financial control, offering significant opportunities for increasing the transparency, accountability, and sustainability of control procedures.

4. Results

The research highlights the need for the continued implementation and adaptation of digital tools in financial control practices. Given the high degree of statistical significance of the relationships found, supervisory institutions are recommended to expand their investments in technologies that support the collection, processing, and protection of information to respond adequately to the challenges in a modern financial context.

The results of the analysis in Table 1 show a high degree of statistical significance between applying digital tools and improving some critical aspects of financial control, including the efficiency of information collection (correl. coef. 0.201, and Sig. 0.014), analysis information (correl. coef. 0.227, and Sig. 0.005), and risk analysis and management (interrelationship with ERP—correl. coef. 0.260 and Sig. 0.001; CRM—correl. coef. 0.286 and Sig. 0.000; AI—correl. coef. 0.303 and Sig. 0.000; Data encryption, hashing, and catching technologies—correl. coef. 0.323 and Sig. 0.000; Software for processing large databases—correl. coef. 0.292 and Sig. 0.000). In the field of cybersecurity and data protection, the results of the study show that there is a strong positive correlation with ERP (correl. coef. 0.185 and Sig. 0.024), CRM (correl. coef. 0.192 and Sig. 0.019), AI (correl. coef. 0.232 and Sig. 0.004), data encryption, hashing, and caching technologies (correl. coef. 0.426 and Sig. 0.000), and big data processing software (correl. coef. 0.167 and Sig. 0.041).

These data support the hypothesis that the technological integration of various digital tools plays a significant role in the adaptability and optimization of financial controls, offering significant opportunities for increasing transparency, accountability, and resilience of control procedures. The results in Table 1 show that technological tools are essential to modernizing financial control processes and improving the security and efficiency of information management.

ERP and CRM systems, as integrated information systems, offer a comprehensive approach to collecting, analyzing, and managing corporate data, allowing organizations to identify and manage risks more effectively. On the other hand, artificial intelligence and big data processing applications help analyze complex and voluminous databases. Through machine learning and analysis algorithms, these technologies can identify patterns and trends that human analysis could not easily recognize. This leads to a deeper understanding of risks and opportunities and improved risk management and information protection strategies. The significant positive correlation between these technological solutions, improved risk analysis and management processes, and information protection highlights the fundamental role that digital tools play in modern financial control. They optimize and accelerate data collection and analysis processes and increase the accuracy and reliability of findings.

In conclusion, a strong positive correlation between digital technologies and improving the processes of analysis, risk management, and information protection requires financial institutions and supervisory authorities to adopt and integrate these innovations into their operational strategies. It will improve the efficiency and safety of their operations and enable them to be more effective in a rapidly changing business environment.

From Table 1 of the study, a positive correlation was found between using the software for processing large databases and improving the processes of preparing reports, reports from the financial control institutions (correl. coef. 0.207 and Sig. 0.011), and gathering evidence (correl. coef. 0.166 and Sig. 0.042). The relationship highlights the importance of technological innovation in financial control and information management. Significant data processing software allows financial control institutions to analyze extensive and complex datasets quickly and accurately. This results in a significant improvement in the quality and speed of reporting, which is critical for effective risk management and informed decision-making. This way, the software for processing large databases enables financial control authorities to generate more detailed and accurate analyses.

Furthermore, the positive correlation between using the software and collecting evidence highlights its role in enhancing trust and transparency in financial control. Big data processing tools facilitate the identification of anomalies and potential risks, thereby helping to gather reliable evidence that supports the analyses and conclusions in reports.

The existence of a strong positive correlation between the software for processing large databases and the improvement of the processes in the preparation of reports and the collection of evidence illustrates the significant contribution of technological innovations to the increase in efficiency and transparency in financial control institutions. It highlights the need for the continued integration and optimization of digital tools in the operational procedures of financial control institutions to ensure the reliability and timeliness of information.

From Table 2, it is found that there is a strong correlation between inspection and evidence-gathering processes in the context of financial control (correl. coef. 0.282 and Sig. 0.001). The relationship highlights how the intensity and effectiveness of inspection activities contribute significantly to the quality and volume of evidence collected, which is critical to successfully implementing financial controls and subsequent analyses and assessments.

Table 1. Interrelationship between applied digital tools and information management activities.

		Collecting the Information	Information Processing	Analysis of Information	Verification of Information	Risk Analysis and Management	Cyber Security and Protection of Personal Data	Large Database Processing	Preparation of Analyses, Reports and Others	Gathering Evidence
Microsoft Office Suite	Correl. Coef. Sig. (2-tailed)	0.159 0.052	−0.082 0.314	0.027 0.739	0.131 0.108	−0.035 0.667	0.088 0.280	−0.056 0.493	0.171 * 0.036	0.107 0.190
ERP systems	Correl. Coef. Sig. (2-tailed)	−0.110 0.179	−0.009 0.909	0.140 0.087	0.022 0.792	0.260 ** 0.001	0.185 * 0.024	−0.008 0.922	0.026 0.746	0.003 0.973
CRM systems	Correl. Coef. Sig. (2-tailed)	−0.004 0.964	0.066 0.420	0.109 0.181	0.037 0.649	0.286 ** 0.000	0.192 * 0.019	0.057 0.488	0.086 0.291	−0.019 0.812
Artificial intelligence	Correl. Coef. Sig. (2-tailed)	−0.019 0.813	0.001 0.989	0.021 0.799	−0.023 0.776	0.303 ** 0.000	0.232 ** 0.004	−0.024 0.766	−0.007 0.931	−0.013 0.870
Data encryption, hashing and caching technologies	Correl. Coef. Sig. (2-tailed).	0.201 * 0.014	0.147 0.072	0.115 0.159	0.058 0.475	0.323 ** 0.000	0.466 ** 0.000	0.177 * 0.030	0.056 0.495	0.027 0.745
Software for processing large databases	Correl. Coef. Sig. (2-tailed)	0.125 0.128	0.131 0.111	0.227 ** 0.005	0.142 0.084	0.292 ** 0.000	0.167 * 0.041	0.474 ** 0.000	0.207 * 0.011	0.166 * 0.042

** . Correlation is significant at the 0.01 level (2-tailed); * . Correlation is significant at the 0.05 level (2-tailed). **Source:** Own research and calculations.

Table 2. Interrelationship between applied forms of control and information management activities.

		Collecting the Information	Information Processing	Analysis of Information	Verification of Information	Risk Analysis and Management	Cyber Security and Protection of Personal Data	Large Database Processing	Preparation of Analyses, Reports and Others	Gathering Evidence
Inspection	Correl. Coef.	−0.002	0.129	0.000	−0.035	0.002	−0.081	−0.008	−0.088	0.282 **
	Sig. (2-tailed)	0.981	0.114	0.998	0.669	0.981	0.319	0.923	0.281	0.001
Monitoring	Correl. Coef.	0.106	0.129	0.215 **	0.087	0.134	0.304 **	0.165 *	0.253 **	−0.119
	Sig. (2-tailed)	0.196	0.115	0.008	0.287	0.102	0.000	0.043	0.002	0.144
Supervision	Correl. Coef.	0.106	0.028	0.115	0.100	0.180 *	0.180 *	0.050	0.132	−0.104
	Sig. (2-tailed)	0.194	0.729	0.159	0.223	0.028	0.028	0.541	0.107	0.201
Audit	Correl. Coef.	0.113	0.055	0.056	−0.063	0.215 **	0.160	0.037	0.125	0.104
	Sig. (2-tailed)	0.166	0.504	0.495	0.438	0.009	0.050	0.649	0.124	0.203
Check	Correl. Coef.	0.072	−0.023	0.021	0.073	0.063	−0.140	−0.098	0.031	0.137
	Sig. (2-tailed)	0.377	0.779	0.795	0.374	0.439	0.087	0.229	0.702	0.094
Revision	Correl. Coef.	0.052	0.090	0.149	0.038	0.019	−0.052	0.039	0.106	−0.078
	Sig. (2-tailed)	0.526	0.272	0.069	0.639	0.813	0.526	0.633	0.195	0.337

** . Correlation is significant at the 0.01 level (2-tailed); * . Correlation is significant at the 0.05 level (2-tailed). **Source:** Own research and calculations.

An inspection as a direct and active method for assessing compliance with established standards and regulations is crucial in identifying potential inconsistencies and irregularities in an organization's operations. The effectiveness of these processes depends significantly on the ability of supervisory authorities to collect, analyze, and interpret evidence that supports their observations and conclusions. The strong correlation between inspection and evidence collection highlights that quality inspection activities are fundamental to creating a reliable and objective database for decision-making.

Analysis of the correlation reveals that integrating digital tools and technologies into inspection processes significantly increases the efficiency and scope of evidence collection. Digital platforms and tools for data collection offer opportunities for the broader and deeper implementation of checks and faster and more accurate documentation of collected facts and circumstances. It leads to greater precision and reliability of the evidence base, which is the basis for the strong correlation between the inspection and evidence-collection processes.

The analysis of the collected data reveals a strong correlation between the monitoring and the processes of data protection (correl. coef. 0.215 and Sig. 0.008), data processing (correl. coef. 0.304 and Sig. 0.000), and preparation of analyses (correl. coef. 0.165 and Sig. 0.043) in the context of financial control and information management (correl. coef. 0.253 and Sig. 0.002). The interrelationship highlights the importance of continuous monitoring and analytical procedures to maintain high security and efficiency in enterprise data management. Monitoring is critical in identifying potential risks and vulnerabilities in data management systems as a process of constant monitoring and evaluating operational activity. Effective monitoring allows organizations to take timely measures to protect data, preventing unauthorized access, loss, or misuse of information. The strong correlation between monitoring and data protection highlights that reliable monitoring mechanisms are fundamental to maintaining the integrity and confidentiality of information assets.

On the other hand, the interrelationship between monitoring and data processing and analysis processes shows that continuous monitoring helps to optimize analytical procedures. Through systematic monitoring, organizations can ensure that the data used in analytical processes is up-to-date, accurate, and reliable. It is essential for generating valid and objective analyses supporting informed management decisions and strategy formulation. The strong correlation between monitoring and the critical processes of data protection, processing, and analysis highlights organizations' integrated nature of information management. The analysis supports the idea that investments in technologies and practices for effective monitoring are essential to strengthening information security and increasing the analytical capability of organizations.

The analysis of the collected data highlights the strong correlation dependence between the audit and the risk management and assessment processes in the organizations (correl. coef. 0.215 and Sig. 0.009). The interrelationship is essential because it shows how effective auditing can significantly contribute to identifying, analyzing, and minimizing risks. Auditing, as a systematic process of evaluating the effectiveness of risk management, control processes, and management and operational procedures, plays a critical role in improving corporate resilience and reliability. By conducting audits, organizations can discover potential vulnerabilities and gaps in their risk management systems and receive recommendations for their optimization and improvement. The strong correlation between auditing and risk management also highlights the importance of integrating these two processes. This results in a more dynamic and effective risk management that can adapt to changing external and internal conditions.

Furthermore, the strong correlation between audit and risk management processes highlights the need for continuous training and development of audit teams in risk management. It includes understanding new risks arising from technological changes, regulatory updates, or changes in business models. Only then can audit functions remain relevant and provide added value through their activities. The strong correlation between audits and risk management and assessments illustrates how interconnected and interdependent these

two aspects are in digital transformations. Understanding and implementing effective audit and risk management practices increases operational efficiency.

5. Discussion

Considering the study's RQ(s)—what extent the application of digital tools in financial control improves its effectiveness and how modern technologies improve the efficiency and accuracy of information used in financial control institutions—the results highlight the need for the continued development and optimization of inspections and evidence-gathering methods and practices within financial control. Concerning Hypothesis 1, we found that applying digital tools in financial control improves the efficiency of processes and leads to greater adaptability to changing economic conditions. Regarding the testing of Hypothesis 2, it can be concluded that digital tools do not have an optimal application despite the significant opportunities to improve the information management processes of financial control institutions.

Implementing digital information management tools requires careful planning and a strategic approach. Challenges include software adaptation, employee training, data protection, and integration with existing systems. Successful implementation requires clearly defined objectives, commitment to the management of financial control institutions, and continuous monitoring of the processes and results.

Digital information management tools are crucial in modern financial control, offering significant efficiency, accuracy, and strategic decision-making advantages. Their role in the transformation of financial operations is undeniable as they enable better integration, analysis, and management of financial information, ensuring greater transparency and accountability in financial control.

Identification and access management are fundamental aspects of digital information management in financial control. Investments in modern digital tools and strategies for identification and access management can significantly increase the security and efficiency of financial controls, ensuring the protection of sensitive information and maintaining the trust of customers and business partners. The wide use of the set of tools in financial control practices inevitably raises the issue of the unification (typing) of indicators expressing financial and non-financial information, i.e., bringing them to a norm, to uniformity.

Using digital tools to work with data, analyze financial information, and perform analytical procedures significantly impacts control processes. Control activities provide the application of complex analyses, including statistical methods that allow the implementation of optimization and risk models. Control authorities use these tools to assess financial and non-financial data objectively, ensuring high reliability and accuracy in conducting audit procedures. Digital tools such as financial management software, enterprise resource planning (ERP) systems, and automated data processing systems significantly streamline financial analysis, budgeting, forecasting, and reporting.

In today's dynamic economic environment, financial control institutions face a growing need for efficiency and adaptability in their financial control processes. In this context, digital tools play a crucial role in optimizing the management of information resources. Hypothesis 1 suggests that the significant application of digital tools in financial control leads to improved process efficiency, reduced human errors, and higher adaptability to changing economic conditions. The hypothesis is based on the premise that automation and the integration of digital technologies can significantly speed up data collection and processing, minimize the risk of human error, and facilitate rapid decision-making in response to external changes. Big data analysis tools, for example, allow control authorities to identify trends and anomalies in real-time, which contributes to increasing the overall effectiveness and reliability of financial control.

The research results highlight the need for the continued development and optimization of inspection and evidence-gathering methods and practices within financial control. The strong correlation between these two aspects supports the idea of an integrated approach that includes both the improvement in inspection procedures and the maximum

use of new technologies for the efficient collection and analysis of evidence. It will help increase transparency and accountability and, ultimately, the resilience of financial systems.

The established strong correlation dependence between monitoring and data protection, processing, and analysis processes emphasizes the need for a comprehensive and coordinated approach to information security management and analytics. Organizations must continue to develop and integrate advanced monitoring systems that help optimize information processes and provide a reliable basis for strategic decision-making.

Dynamic economic conditions require supervisory institutions to be rapidly adaptable and flexible in their financial strategies and operations. Digital tools provide real-time access to financial data and market analyses, enabling financial managers to quickly respond to changing conditions by adapting strategies and optimizing resources. This flexibility is critical to maintaining business competitiveness and sustainability in a frequently changing economic environment. It is the key to sustainable development and success in the modern economy, proving that digitization is essential for modern financial control.

However, Hypothesis 2 highlights the challenge of digital tools in financial control institutions that must be optimally used to analyze, process, and evaluate information. In times of continuous technological development, digital tools offer significant opportunities to improve financial control institutions' information management processes. Despite the availability of various such tools, concerns remain regarding their optimal application.

The problem may be due to several factors. One is the need for more specific skills and training among staff. These outdated technological systems are incompatible with new tools, or more data systems must be integrated within individual financial control institutions. Even when institutions introduce new digital tools, they often need to invest more in training their employees to use them effectively. It leads to a situation where technologies are available but not used to their maximum potential due to a lack of knowledge and skills.

Integrating new digital tools into the existing information systems also represents a challenge for the financial control institutions in Bulgaria. Many face integration problems due to cross-platform incompatibilities or a lack of standardization. It can lead to a fragmented information environment where data need to be processed or analyzed effectively.

Introducing digital tools in financial control institutions is a critical process that can significantly increase efficiency, transparency, and accountability. This study found that all the necessary prerequisites for implementing digital tools were provided in the examined financial control institutions. An in-depth analysis of the current processes and systems was carried out during the implementation. The costs of a preliminary analysis include consulting services, employee training, and temporary trials of various technological solutions. Each financial control institution has servers, network equipment, data protection, and cyber security systems. These costs can be significant, but they are critical to maintaining the system's integrity and security. Spending primarily focuses on document management systems, analytics software, remote work platforms, and other tools that facilitate verification and auditing processes. An essential aspect of implementing digital tools is training employees to work effectively with the new systems. It requires time, resources, and potential changes in management practices and organizational culture to encourage adaptation and innovation. Once digital tools are implemented, constant maintenance and updating are required to ensure their effectiveness. It includes both technical support and regular software update training.

Therefore, the potential of digital technologies to improve financial control remains unrealized, making it difficult to manage risks and take advantage of process improvement opportunities effectively. To overcome these challenges, supervisory institutions must actively work to evaluate the effectiveness of their digital tools. It includes regular reviews of information analyses and processing processes and adapting learning and integration strategies in line with best practices. In this regard, it is essential to encourage the introduc-

tion of innovations that will support the work of control authorities and their confidence in the use of new technologies.

6. Conclusions

This research highlights the critical role of digital tools in transforming financial control in financial control institutions. The study found significant benefits to integrating digital technologies, including increasing process efficiency, reducing human error, and increasing adaptability to changing economic conditions. At the same time, however, the research also reveals the existing challenges related to the need for more suboptimal use of available digital tools to analyze, process, and evaluate information.

The results support the hypothesis that the significant application of digital tools in financial control can lead to improved efficiency and greater transparency in managing information resources. It, in turn, reinforces the need for a strategic approach to digitization that includes training staff, modernizing IT infrastructure, and improving data management systems integration processes. In this regard, to derive the maximum benefits from digital tools in the control processes, the financial control institutions must accept the changes and adapt to the new technological realities. It requires commitment at all levels of the organization and a clear vision of the future of financial control that can meet the growing demands for efficiency, transparency, and responsibility in the management of information resources. In this way, supervisory institutions can ensure that they stay abreast of the times and continue to play their role in maintaining sound financial stability and resilience in the economy.

The two hypotheses put forward emphasize the importance of a strategic approach to implementing and using digital tools in financial control institutions. To realize the full potential of digitization in financial control, it is necessary to develop and implement clear strategies for the training and development of personnel, modernization of IT infrastructure, and improvement of integration of data management systems. Thus, financial control institutions can increase their efficiency and adaptability and ensure that they make the most of the opportunities provided by digital technologies to improve the processes of collection, processing, and use of information resources.

Limitations and Future Work

This study was by no means exhaustive or definitive. According to the authors, the article has some limitations. The study was limited to four financial control institutions in Bulgaria that cover the control of the revenue and expenditure part of the budget. Their choice is because they apply all forms of control—inspection, audit, monitoring, and supervision. The study mainly focused on applying digital tools to implement more effective control procedures. However, the experts involved in the study have the most comprehensive data on the application of digital tools in the control process and its effects. Given that, the study's findings and conclusions are based on a limited number of research papers, and the study is a survey. Given the extremely rapid development of digital tools and their increasing role in improving business processes, the authorial team cannot explore all aspects theoretically and empirically. Due to the topic's interdisciplinary nature, we can only cover some topic areas or predict which areas may be covered in the next few years. However, our study is valuable in that it can serve as a starting point for researchers interested in related research.

The authorial team will continue to work in the stated areas of research, including institutional control in the public sector. Future work could explore the application of digital tools in internal control in business organizations. The issues this paper explored will be a starting point for our future work. Future research will focus on the extent to which the digital transformation of business processes influences the adaptation and development of control processes. The authors also considered one type of control, financial control, rather than control in general. On that basis, the authors focused on financial control and

the application of digital tools in information management. In this way, future research will assess the extent of applicability of new technologies in the area of financial control.

Author Contributions: Conceptualization, methodology, software, validation, formal analysis, investigation, resources, data curation, writing—original draft preparation—writing—review and editing—visualization, supervision, project administration, funding acquisition, S.K. and Z.Z. contributed equally through every process of the research study. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: Data are unavailable due to proprietary and privacy reasons.

Conflicts of Interest: The authors declare no conflicts of interest.

References

- Aleksandrova, Aleksandrina, Valentina Ninova, and Zhelyo Zhelev. 2023. A Survey on AI Implementation in Finance, (Cyber) Insurance and Financial Controlling. *Risks* 11: 91. [CrossRef]
- Almaleeh, Nisreen Mohammed Said. 2021. The Impact of Digital Transformation on Audit Quality: Exploratory Findings from a Delphi Study. *Science Journal for Commercial Research* 3: 9–36.
- Benantar, Messaoud. 2005. *Access Control Systems: Security, Identity Management and Trust Models*. Berlin: Springer Science & Business Media. Available online: [https://books.google.bg/books?hl=bg&lr=&id=dpjsXA5SPPwC&oi=fnd&pg=PA1&dq=Identity+and+access+management+\(controlling+access+and+managing+identity\)&ots=VMzxqep5B&sig=MGJrA7whg61bnrForFHMD3IVBPo&redir_esc=y#v=onepage&q=Identity%20and%20access%20management%25](https://books.google.bg/books?hl=bg&lr=&id=dpjsXA5SPPwC&oi=fnd&pg=PA1&dq=Identity+and+access+management+(controlling+access+and+managing+identity)&ots=VMzxqep5B&sig=MGJrA7whg61bnrForFHMD3IVBPo&redir_esc=y#v=onepage&q=Identity%20and%20access%20management%25) (accessed on 3 March 2024).
- Berger, Allen N., and Anoud W. Boot. 2022. Financial Intermediation Services and Competition Analyses: Review and Paths Forward for Improvement. *Journal of Financial Intermediation* 57: 101072. [CrossRef]
- Berger, Allen N., Björn Imbierowicz, and Christian Rauch. 2016. The roles of corporate governance in bank failures during the recent financial crisis. *Journal of Money, Credit and Banking* 48: 729–70. [CrossRef]
- Biemans, Wim. 2023. The impact of digital tools on sales-marketing interactions and perceptions. *Industrial Marketing Management* 115: 389–407. [CrossRef]
- Boem, Ingrid, Bořek Patzák, and Alena Kohoutková. 2023. Study on the effectiveness of the CRM system: Numerical simulations on masonry piers with OOFEM layered elements. *Procedia Structural Integrity* 44: 2238–45. [CrossRef]
- Browmik, Abhimanyu, Madhushree Sannigrahi, Deepraj Chowdhury, Ajoy Dey, and Sukhpal Singh Gill. 2023. CloudAISim: A toolkit for modelling and simulation of modern applications in AI-driven cloud computing environments. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations* 3: 100–50. [CrossRef]
- Chen, Linfei, and Jianping Wang. 2023. An image decryption technology based on machine learning in an irreversible encryption system. *Optics Communications* 541: 129561. [CrossRef]
- Cornwell, Nikki, Christopher Bilson, Adrian Gepp, Steven Stern, and Bruce J. Vanstone. 2023. Modernising operational risk management in financial institutions via data-driven causal factors analysis: A pre-registered report. *Pacific-Basin Finance Journal* 77: 101906. [CrossRef]
- Dorogovs, Pjotrs, Irina Solovjova, and Adrejs Romanovs. 2013. New Tendencies of Management and Control of Operational Risk in Financial Institutions. *Procedia-Social and Behavioral Sciences* 99: 911–18. [CrossRef]
- Dube, Vibhuti S., Pooja Pandey, Pradeep K. Asthana, and Hamid Abdullah. 2023. Digital Financial Literacy: An Empirical Study on Millennials in India. *Empirical Economics Letters* 22: 10–5281. [CrossRef]
- Dubin, Ran. 2024. Content Disarm and Reconstruction of Microsoft Office OLE files. *Computers & Security* 137: 103647. [CrossRef]
- European Commission. 2020. White Paper on Artificial Intelligence. February 19. Available online: <https://op.europa.eu/bg/publication-detail/-/publication/ac957f13-53c6-11ea-aece-01aa75ed71a1/language-bg> (accessed on 29 February 2024).
- Fang, Xusheng, and Chunhua Ju. 2024. Digital transformation and corporate financialization in emerging markets: Evidence from China. *Heliyon* 10: e24616. [CrossRef] [PubMed]
- Fernandez, Dahlia, Zaini Zainol, and Hawa Ahmad. 2017. The impacts of ERP systems on public sector organizations. *Procedia Computer Science* 111: 31–36. [CrossRef]
- Grosu, Maria, Ioan-Bogdan Robu, and Costel Istrate. 2020. The Quality of Financial Audit Missions by Reporting the Key Audit Matters. *Audit Financiar* 18: 182–95. [CrossRef]
- Hansen, Hans F., Moutaz Haddara, and Marius Langseth. 2023. Investigating ERP System Customization: A Focus on Cloud-ERP. *Procedia Computer Science* 219: 915–23. [CrossRef]
- Hendricks, Kevin B., Vinod R. Singhal, and Jeff K. Stratman. 2007. The impact of enterprise systems on corporate performance: A study of ERP, SCM, and CRM system implementations. *Journal of Operations Management* 25: 65–82. [CrossRef]

- Jatobá, Mariana N., João J. Ferreira, Paula O. Fernandes, and João P. Teixeira. 2023. Intelligent human resources for the adoption of artificial intelligence: A systematic literature review. *Journal of Organizational Change Management* 36: 1099–124. [CrossRef]
- Kang, Kai, and Ray Y. Zhong. 2023. A methodology for production analysis based on the RFID-collected manufacturing big data. *Journal of Manufacturing Systems* 68: 624–34. [CrossRef]
- Kang, Soojin, Giyoon Kim, Myungeso Park, and Jongsung Kim. 2021. Methods for decrypting the data encrypted by the latest Samsung smartphone backup programs in Windows and macOS. *Forensic Science International: Digital Investigation* 39: 301–10. [CrossRef]
- Kerr, David S., Karen A. Loveland, Katherine Taken Smith, and Lawrence Murphy Smith. 2023. Cryptocurrency Risks, Fraud Cases, and Financial Performance. *Risks* 11: 51. [CrossRef]
- Keshta, Ismail, Yassine Aoundi, Mukta Sandhu, Abha Sandhu, Pardayev A. Xalikovich, Ali Rizvan, Mukesh Soni, and Sachin Lalar. 2023. Blockchain aware proxy re-encryption algorithm-based data sharing scheme. *Physical Communication* 58: 102048. [CrossRef]
- Kostova, Silviya. 2012. Audit procedures for disclosure of errors and fraud in financial statements of Bulgarian companies. *Științe Economice* 59: 49–66. Available online: <https://www.cceol.com/search/article-detail?id=548027> (accessed on 28 February 2024). [CrossRef]
- Kumar, Yogesh, Jitender Kumar, and Poonam Sheoran. 2024. Integration of cloud computing in BCI: A review. *Biomedical Signal Processing and Control* 87, Pt A: 105548. [CrossRef]
- Kuntadi, Cris, Cipto Juwanto, and Muhammad I. Zakaria. 2023. Factors Affecting the Preparation of Government Financial Statements: Application of Government Accounting Standards, Utilization of Information Technology, and Internal Control System (Literature Review of State Financial Management). *Dinasti International Journal of Economics, Finance & Accounting* 4: 326–33. [CrossRef]
- Lambovska, Maya, and Krasimir Yordanov. 2020. Understanding ‘Motivation-Internal Control’ Relations in Municipalities. *TEM Journal* 9: 662–71. [CrossRef]
- Li, Yong. 2019. Design a management information system for financial risk control. *Cluster Computing* 22 Suppl. S4: 8783–91. [CrossRef]
- Liu, Wenjun, Guoyu Lin, and Qian He. 2024. Enhanced management information disclosure responsibilities and corporate risk-taking: Evidence from the accountability system for errors in China. *International Review of Economics & Finance* 89, Pt B: 511–31. [CrossRef]
- Lyons, Angela C., and Josephine Kass-Hanna. 2021. A methodological overview to defining and measuring “digital” financial literacy. *Financial Planning Review* 4: e1113. [CrossRef]
- Malina, Lukas, Petr Dzurenda, Jan Hajny, and Zdenek Martinasek. 2018. Secure and efficient two-factor zero-knowledge authentication solution for access control systems. *Computers & Security* 77: 500–13. [CrossRef]
- Möller, Klaus, Utz Schäffer, and Frank Verbeeten. 2020. Digitalization in management accounting and control: An editorial. *Journal of Management Control* 31: 1–8. [CrossRef]
- Morgan, Peter J., Bihong Huang, and Long Q. Trinh. 2019. The Need to Promote Digital Financial Literacy for the Digital Age. Available online: <https://t20japan.org/task-forces/the-future-of-work-and-education-for-the-digital-age/> (accessed on 1 March 2024).
- Murugan, Senthil M., and Sree Kala T. 2023. Large-scale data-driven financial risk management & analysis using machine learning strategies. *Measurement: Sensors* 27: 100756. [CrossRef]
- Musa, Khaled. 2023. Evaluating Encryption Algorithm Method Based on Software Encryption Tools for Information Security. *International Journal of Current Science Research and Review* 6: 3188–2194. [CrossRef]
- Olewi, Raad. 2023. The Impact of Electronic Data Interchange on Accounting Systems. *International Journal of Professional Business Review* 8: e01163. [CrossRef]
- Onyshchenko, Svetlana, Yevhen Zhyvylo, Anna Cherviak, and Stanislav Bilko. 2023. Determining the patterns of using information protection systems at financial institutions in order to improve the level of financial security. *Eastern-European Journal of Enterprise Technologies* 5: 65–76. [CrossRef]
- Otero, Angel R. 2015. An information security control assessment methodology for organizations’ financial information. *International Journal of Accounting Information Systems* 18: 26–45. [CrossRef]
- Otsubo, Yuhei, Mamoru Mimura, and Hidehiko Tanaka. 2016. O-Checker: Detection of Malicious Documents through Deviation from File Format Specifications. Available online: <https://www.blackhat.com/docs/us-16/materials/us-16-Otsubo-O-checker-Detection-of-Malicious-Documents-through-Deviation-from-File-Format-Specifications-wp.pdf> (accessed on 3 March 2024).
- Pu, Yuwen, Chunqiang Hu, Shaojiang Deng, and Arwa Alrawais. 2020. R²PEDS: A recoverable and revocable privacy-preserving edge data sharing scheme. *IEEE Internet of Things Journal* 7: 8077–89. [CrossRef]
- Sharma, Deepak H., C. A. Dhote Dr., and Manish M. Potey. 2016. Identity and access management as security-as-a-service from clouds. *Procedia Computer Science* 79: 170–74. [CrossRef]
- Suleiman, Shaima A., and Amer M. Salman. 2023. The Importance of the Reliability of Accounting Information in Determining Taxable Income. *International Journal of Professional Business Review* 8: e01992. [CrossRef]
- Tiberius, Victor, and Stefanie Hirth. 2019. Impacts of digitization on auditing: A Delphi study for Germany. *Journal of International Accounting, Auditing and Taxation* 37: 100288. [CrossRef]
- Wan, Minghua, Xueyu Chen, Cairong Zhao, Tianming Zhan, and Guowei Yang. 2022. A new weakly supervised discrete discriminant hashing for robust data representation. *Information Sciences* 611: 335–48. [CrossRef]
- Yusif, Salifu, and Abdul Hafeez-Baig. 2021. A conceptual model for cybersecurity governance. *Journal of Applied Security Research* 16: 490–513. [CrossRef]

-
- Zarkova, Silviya, Dimitar Kostov, Petko Angelov, Tsvetan Pavlov, and Andrey Zahariev. 2023. Machine Learning Algorithm for Mid-Term Projection of the EU Member States' Indebtedness. *Risks* 11: 71. [[CrossRef](#)]
- Zhang, Feng, Bin Yang, and Lei Zhu. 2023. Digital technology usage, strategic flexibility, and business model innovation in traditional manufacturing firms: The moderating role of the institutional environment. *Technological Forecasting and Social Change* 194: 122726. [[CrossRef](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.