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The Role of Accounting Information Systems in Company Operational Efficiency: A Bibliometric Study

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ABSTRACT

This study explores the role of Accounting Information Systems (AIS) in enhancing company operational efficiency through a bibliometric analysis of academic literature published between 2000 and 2024. Using data retrieved from the Scopus database and analyzed with VOSviewer software, the study maps key research trends, influential authors, and thematic developments in the field. The results reveal that AIS remains a central focus in accounting and information systems research, particularly in areas such as financial control, information use, and managerial decision-making. Recent trends indicate a growing interest in the integration of emerging technologies—such as artificial intelligence, big data analytics, blockchain, and cloud computing—highlighting a shift toward digital transformation and intelligent systems. Co-authorship and country collaboration analyses show active global participation, with strong contributions from the United States, Indonesia, China, and Middle Eastern countries. This study offers valuable insights into the intellectual structure of AIS research, identifies gaps for future inquiry, and underscores the strategic importance of AIS in achieving operational excellence.

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1. INTRODUCTION

In today's dynamic and competitive business environment, organizations constantly seek ways to enhance operational efficiency while maintaining strategic agility. One of the fundamental enablers of this pursuit is the adoption of advanced information systems, particularly Accounting Information Systems (AIS). AIS has evolved beyond its traditional role of recording financial transactions to becoming a strategic tool that supports decision-making, internal control, and operational management [1]. With the rise of digital technologies, companies are integrating AIS with broader Enterprise Resource Planning (ERP) systems to improve data accuracy, streamline processes, and foster better coordination across departments [2].

Operational efficiency, defined as the ability of an organization to deliver products or services in the most cost-effective manner while ensuring high quality, has become a key performance indicator in the modern business landscape [3]. Efficiency in operations reduces waste, minimizes costs, and enhances customer satisfaction, which ultimately contributes to a firm's competitive advantage. AIS plays a significant role in achieving these

outcomes by providing timely, relevant, and accurate financial and non-financial information necessary for strategic and operational decision-making [4]. By automating routine accounting tasks and integrating financial data with operational metrics, AIS reduces the burden of manual processing and facilitates efficient resource utilization.

Over the past two decades, the digitalization of accounting practices and the proliferation of new technologies—such as cloud computing, artificial intelligence (AI), and big data analytics—have further transformed AIS into a critical asset for improving operational performance. Modern AIS platforms enable real-time data access, predictive analytics, and process automation, thus enhancing responsiveness and operational transparency [5]. These systems also support compliance with financial reporting standards and internal controls, contributing to more robust governance frameworks. As businesses face increasing complexity and data volumes, the strategic integration of AIS becomes essential not only for reporting accuracy but also for overall business efficiency and sustainability.

The growing recognition of AIS as a driver of efficiency has spurred substantial academic interest, resulting in a diverse body of literature that spans technical, managerial, and organizational perspectives. However, the literature is fragmented across various domains, methodologies, and time periods, making it challenging to capture the full scope of knowledge on this topic. Bibliometric analysis provides a powerful approach to systematically map, quantify, and interpret this scholarly landscape [6]. Through bibliometric techniques, researchers can identify key themes, influential publications, emerging trends, and knowledge gaps in the field, offering valuable insights for both academics and practitioners.

Despite the increasing number of studies on AIS and operational efficiency, there has been limited effort to consolidate this body of knowledge using a bibliometric lens. Most existing research focuses on case studies, surveys, or conceptual frameworks, which, while valuable, do not provide a holistic overview of how the field has evolved over time or where future research might be directed. A bibliometric study can help bridge this gap by analyzing publication patterns, citation networks, keyword co-occurrences, and authorship trends related to AIS and operational efficiency. Such an approach can enhance our understanding of the intellectual structure of the field and its practical implications for businesses seeking to leverage AIS for operational excellence.

While Accounting Information Systems are widely recognized for their potential to enhance operational efficiency, the academic literature on this topic remains scattered and lacks a unified framework for understanding its development and trajectory. Existing research often addresses isolated aspects of AIS implementation or evaluates efficiency outcomes in specific industries or regions, without synthesizing the broader academic discourse. Furthermore, no comprehensive bibliometric analysis has been conducted to trace the evolution, impact, and interconnectedness of research in this area. This fragmentation hinders scholars and practitioners from fully grasping the key developments, influential works, and future directions in the study of AIS and operational efficiency. This study aims to conduct a bibliometric analysis of the academic literature on the role of Accounting Information Systems in enhancing company operational efficiency.

Evolution and Components of Accounting Information Systems

AIS is traditionally defined as a system that collects, stores, and processes financial and accounting data to produce information used by decision-makers [7]. Over time, AIS has evolved from basic ledger systems to highly integrated, computerized platforms that connect various organizational functions. [8] highlights that a modern AIS typically includes components such as hardware, software, people, procedures, and internal controls, all designed to ensure the reliability and timeliness of financial

information. The development of AIS has been closely tied to advances in information technology. The shift from manual systems to computerized accounting in the 1970s and the adoption of enterprise systems in the 1990s significantly enhanced the scope and functionality of AIS [8]. More recent developments, such as cloud-based AIS, mobile interfaces, and blockchain-based accounting records, reflect the continuing integration of emerging technologies into accounting systems.

The Role of AIS in Enhancing Operational Efficiency

Operational efficiency is achieved when an organization can produce maximum output with minimum input while maintaining quality and responsiveness. AIS contributes to this goal in several ways. First, it automates repetitive tasks such as data entry, invoice processing, and payroll management, thus reducing labor costs and human error [9]. Second, AIS enhances data accuracy and reporting speed, enabling managers to make timely decisions that improve operations [10]. Studies have shown that companies with effective AIS implementations report improved coordination among departments, faster transaction cycles, and better inventory management [11]. For instance, in manufacturing firms, AIS supports just-in-time (JIT) inventory systems by ensuring real-time visibility of materials and supplies, thereby reducing waste and storage costs. In service-oriented businesses, AIS supports activity-based costing (ABC) and customer profitability analysis, leading to more informed service delivery decisions.

Factors Influencing AIS Implementation Success

The success of AIS implementation in contributing to operational efficiency depends on several organizational, technological, and environmental factors. Research by [12] emphasizes the importance of system quality, information quality, service quality, and user satisfaction in determining the effectiveness of information systems. These criteria have been widely adopted in AIS studies to evaluate system performance. Organizational support, especially from top management, is another critical factor influencing AIS effectiveness [13]. The availability of resources, training programs, and user involvement in system design are also significant. Companies that engage users during the design and customization phases of AIS tend to report higher satisfaction and efficiency outcomes. Moreover, the alignment of AIS functionalities with organizational goals and processes enhances the value derived from the system. Resistance to change and lack of user competence are common barriers to successful AIS adoption. Studies suggest that companies must invest in continuous training and change management initiatives to facilitate system acceptance and utilization [14]. These efforts help bridge the gap between technological capabilities and user proficiency, ensuring that AIS contributes meaningfully to operational goals.

AIS and Integration with Other Information Systems

AIS does not operate in isolation. Its effectiveness often depends on integration with other enterprise systems, such as Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), and Supply Chain Management (SCM) systems. ERP systems, in particular, have become central to AIS research, as they offer a unified platform for financial, operational, and strategic data processing [15]. Integration facilitates seamless information flow across business units, reducing redundancy and delays. For example, the integration of AIS with inventory systems enables real-time updates on stock levels, which informs purchasing and production decisions. Similarly, integration with HR systems streamlines payroll processing and labor cost analysis. Studies indicate that firms with integrated systems achieve better decision-making capabilities, improved forecasting accuracy, and enhanced process control [16]. The challenge of integration lies in ensuring data compatibility, system scalability, and user training. Legacy systems may not be easily compatible with modern AIS platforms,

requiring significant investment in middleware or system upgrades. Nonetheless, organizations that achieve high levels of system integration tend to realize substantial operational gains.

2. METHODS

This study adopts a bibliometric analysis approach to explore the academic literature on the role of Accounting Information Systems (AIS) in enhancing company operational efficiency. The data was sourced exclusively from the Scopus database, chosen for its comprehensive coverage of peer-reviewed publications. A combination of keywords such as "Accounting Information Systems," "AIS," and "Operational Efficiency" was used to formulate the search query, targeting publications from the year 2000 to 2024. The retrieved data, including titles, abstracts, keywords, authors, sources, and citation information, was exported in CSV format compatible with VOSviewer, a specialized software for bibliometric mapping and visualization. The analysis focused on co-authorship networks, keyword co-occurrence, citation analysis, and thematic clusters to identify influential publications, authors, and research trends.

3. RESULTS AND DISCUSSION

3.1 Keyword Co-Occurrence Network Visualization

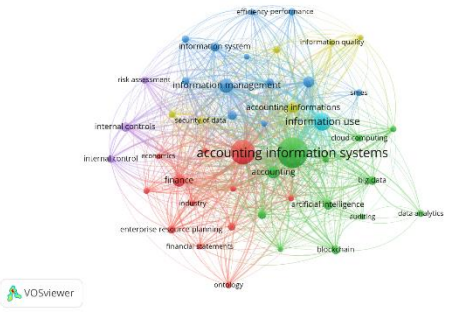

Figure 1. Network Visualization
Source: Data Analysis, 2025

This keyword co-occurrence network visually maps the thematic structure of academic publications related to Accounting Information Systems (AIS) and their connection to operational efficiency. Each node in the network represents a keyword, and the size of the node reflects its frequency of occurrence in the dataset. Lines between nodes (edges) indicate co-occurrence relationships—how often two terms appear together in the same publication. The network is divided into clusters, each represented by a different color, illustrating groups of related themes. The central node in the network is "accounting information systems", which is the most dominant and frequently occurring term, serving as the thematic anchor of the research domain. Closely connected to this core are keywords like "accounting," "finance," "information use," "information management," and "internal controls." These terms suggest that much of the literature focuses on how AIS intersects with financial reporting, control mechanisms, and the use of information for managerial decision-making. The clustering of these core concepts signifies a strong foundation in traditional accounting and finance functions, with AIS being a key enabler of operational transparency and control.

On the green cluster, we observe keywords such as "big data," "data analytics," "artificial intelligence," "cloud computing," "blockchain," and "auditing." This cluster reflects the integration of emerging technologies within AIS research. These technologies are increasingly influencing how organizations manage and interpret accounting data, offering tools for enhancing efficiency through automation, predictive analysis, and real-time decision support. The prominence of these terms indicates a growing scholarly interest in the digital transformation of AIS and its potential to revolutionize operational practices. The blue and yellow clusters revolve around concepts like "information system," "information quality," "efficiency performance," "SMEs," and "information management." These keywords suggest a thematic focus on the application of AIS in small and medium-sized enterprises and the broader context of information system quality and performance outcomes. This reflects

studies exploring how AIS adoption varies across organizational types and the role of system attributes—such as reliability, accessibility, and accuracy—in driving operational improvements.

Lastly, the red and purple clusters contain terms such as "enterprise resource planning," "financial statements," "economics," "risk assessment," and "internal control." These clusters point to research themes that link AIS with risk management, strategic planning, and broader financial system performance. ERP integration with AIS appears to be a recurring topic, especially in relation to improving internal control and reducing financial risk. The dense interconnections within and between these clusters indicate a high level of interdisciplinarity in the field, where accounting, finance, IT, and management perspectives converge to understand how AIS enhances operational efficiency.

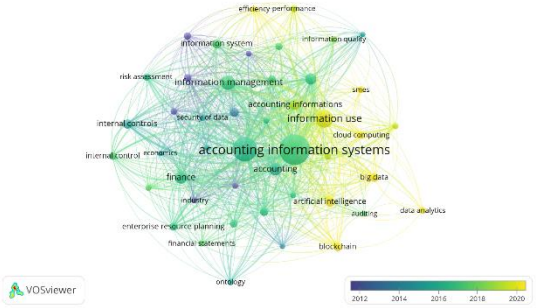

Figure 2. Overlay Visualization
Source: Data Analysis, 2025

This overlay visualization displays the temporal evolution of keywords in the literature on Accounting Information Systems (AIS) and their connection to operational efficiency. The colors of the nodes represent the average publication year of documents in which the keywords appear, with blue indicating older publications (around 2012) and yellow representing more recent ones (closer to 2020). The centrality of the term "accounting information systems" confirms its foundational role in the field, while its greenish color suggests it has remained a consistent research focus over the past decade. The shift toward emerging topics is visible on the right-hand side of the map, where yellow-colored terms such as "cloud computing," "big data," "data analytics," "artificial intelligence," and "blockchain" appear. These newer keywords suggest a clear trend toward the digital transformation of AIS. This indicates that recent research has increasingly explored how integrating advanced technologies into AIS can enhance operational efficiency through automation, real-time data analysis, and intelligent decision support. Their position and color signify that they are current areas of interest and likely to remain significant in future studies. In contrast, the older topics, represented by darker blue and green hues, include terms such as "information management," "information system," "internal controls," and "finance." These themes have formed the traditional core of AIS research, focusing on internal processes, control systems, and financial reporting. Although these topics remain relevant, their color indicates that much of the foundational work in these areas was conducted earlier in the timeline, while newer research is shifting focus toward more dynamic, technology-driven efficiencies. This evolution reflects a broader trend in the literature from foundational AIS functions toward strategic and innovative applications of AIS in a digitally connected environment.

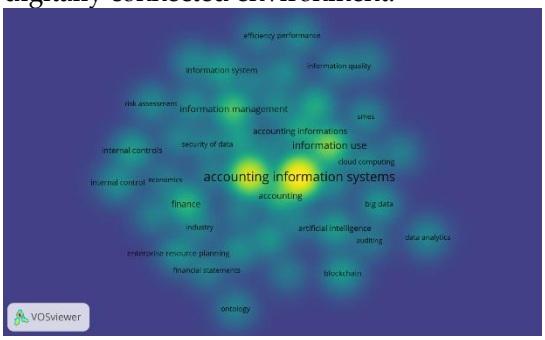

Figure 3. Density Visualization
Source: Data Analysis, 2025

This heatmap visualization highlights the density of keyword occurrences in the literature related to Accounting Information Systems (AIS). The bright yellow regions represent areas with high frequency of co-occurring terms, indicating heavily researched topics. As expected, "accounting information systems" is at the center and most intense, suggesting it is the dominant term

around which most scholarly discussions revolve. Closely associated and also brightly illuminated are keywords such as "accounting," "information use," "finance," and "information management"—signifying that these are the most commonly discussed themes in relation to AIS, particularly in the context of internal control, decision-making, and financial reporting processess. Moving outward from the central cluster, the heatmap transitions into green and then blue, representing moderate to low levels of keyword frequency. These outer areas include terms like "blockchain," "data analytics," "artificial intelligence," and "cloud computing"—indicating emerging but less saturated areas of research. While these technologies are gaining attention, their current representation suggests that they are still developing within the AIS literature. This gradient from bright core to cooler periphery reflects the balance between well-established foundational topics and newer, innovation-driven themes that are shaping the future research direction of AIS and its role in operational efficiency.

3.2 Co-Authorship Visualization

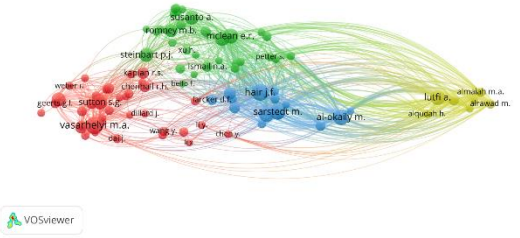

Figure 4. Author Visualization
Source: Data Analysis, 2025

This co-authorship network visualization illustrates the collaboration patterns among key authors in the field of Accounting Information Systems (AIS) and operational efficiency. Each node represents an author, while the colors indicate distinct clusters or research communities with frequent internal collaborations. Authors such as Vasarhelyi M.A., Sutton S.G., and Kaplan R.S. form a strong red cluster focused on foundational and technical AIS research. The green cluster, led by figures like Romney M.B., McLean E.R., and Susanto A., appears to center on systems implementation and information quality studies. Meanwhile, the blue cluster, featuring Hair J.F. and Sarstedt M., likely represents methodological contributions, especially in structural equation modeling used in AIS impact studies. The yellow cluster, including Lutfi A., Almaiah M.A., and Alrawad M., is more recent and shows emerging voices in AIS research with growing citation influence. The dense web of connections across clusters reveals strong interdisciplinary collaboration and suggests an increasingly integrated research landscape in AIS.

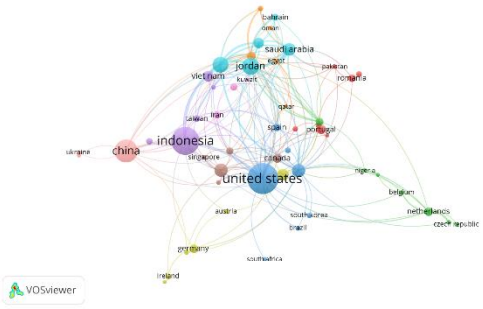

Figure 5. Country Visualization
Source: Data Analysis, 2025

This collaboration network map visualizes international co-authorship patterns in research related to Accounting Information Systems (AIS) and operational efficiency. Each node represents a country, with node size indicating the volume of publications and lines representing co-authorship links between countries. The United States emerges as the most dominant and collaborative hub, maintaining strong research connections with countries like Canada, Indonesia, China, Saudi Arabia, Jordan, and Germany. Indonesia, China, and Jordan also appear as significant regional contributors with growing influence and strong ties to both Western and Middle Eastern countries. European countries such as the Netherlands, Portugal, and Romania form a distinct cluster with more intra-regional collaboration. This network highlights the global nature of AIS research, with increasing cross-border partnerships bridging regions such as North America, Asia, and the Middle East—indicating a diverse and interconnected

scholarly community driving forward innovation and understanding in AIS-related efficiency studies.

DISCUSSION

Thematic Landscape and Intellectual Core

The keyword co-occurrence analysis highlights that "accounting information systems" remains the central theme in the literature, surrounded by frequently co-occurring terms such as "accounting," "information management," "finance," "internal controls," and "information use." This reflects the strong historical and functional link between AIS and traditional accounting roles, particularly in areas of financial reporting, control, and managerial decision-making. The clustering of these keywords into interconnected groups demonstrates the multidisciplinary nature of AIS, encompassing elements from accounting, information systems, finance, and management. Notably, emerging technological themes such as "big data," "cloud computing," "artificial intelligence," "blockchain," and "data analytics" have gained visibility in recent years. These keywords, especially visible in the newer (yellow) areas of the overlay visualization, indicate a transition in scholarly focus toward digital transformation and innovation in AIS. The presence of these terms suggests a shift from merely automating accounting processes to leveraging advanced technologies for real-time data analysis, predictive modeling, fraud detection, and strategic planning. This evolution signals a growing understanding of AIS not just as a back-office tool but as a strategic enabler of operational efficiency and competitive advantage.

Temporal Trends and Research Evolution

The overlay visualization shows a temporal progression in keyword relevance. Older keywords such as "internal control," "finance," "enterprise resource planning," and "financial statements" are more prominent in earlier publications (2012–2015), while newer concepts like "data analytics," "AI," and "blockchain" have emerged predominantly in recent years (2018–2020). This chronological layering illustrates a clear research evolution: from foundational studies centered on systems integration and internal process optimization, to more recent explorations of intelligent technologies and their transformative impact on organizational efficiency. This temporal shift is also supported by the heatmap visualization, where the densest regions remain centered around AIS and accounting but are increasingly surrounded by glowing interest in modern technologies. The field is moving toward exploring how real-time, automated, and intelligent AIS platforms can unlock efficiency through speed, accuracy, scalability, and analytical power. However, while the interest in emerging technologies is rising, the relatively cooler colors around these newer terms imply that they are still underexplored in comparison to the core topics. This presents a significant opportunity for future studies to deepen the integration of technological innovation with AIS research.

Authorship Networks and Influential Scholars

The co-authorship analysis provides insight into the structure of scholarly collaboration within this domain. Key thought leaders such as Romney M.B., Steinbart P.J., Kaplan R.S., Vasarhelyi M.A., and McLean E.R. appear as influential figures who have shaped the foundational body of AIS literature. These authors are primarily associated with early studies on accounting systems, internal control frameworks, and system quality. Their prominence within the green and red clusters reflects their role in forming the theoretical and methodological backbone of the field. More recent research clusters, represented by authors such as Hair J.F., Sarstedt M., Al-Okaily M., Lutfi A., and Almaiah M.A., are linked to studies focusing on structural equation modeling, system adoption behavior, and technology acceptance in various organizational contexts, particularly in developing economies. The appearance of these names in distinct but connected clusters suggests a diversification of research approaches—from theory-driven frameworks to empirical validation of AIS

performance and user satisfaction. Furthermore, it underscores the expanding scope of AIS research beyond the West, with new voices from the Middle East and Asia contributing novel insights and localized perspectives.

Global Collaboration and Research Distribution

The country collaboration map reveals the global nature of AIS research. The United States stands out as the most prolific and central contributor, acting as a major hub for international collaboration. Strong co-authorship links between the U.S. and countries like Indonesia, China, Canada, Jordan, Saudi Arabia, and Germany highlight the country's pivotal role in shaping and disseminating AIS knowledge. Notably, Indonesia and China appear as rising contributors in the domain, with significant research output and expanding international cooperation. These countries, often categorized as emerging economies, have shown increased interest in adopting and studying AIS as a mechanism for improving organizational efficiency and financial transparency. The emergence of Jordan, Saudi Arabia, and Malaysia as visible nodes in the network indicates a growing body of AIS research in the Middle East and Southeast Asia. These regions have witnessed rapid digitalization and ERP system adoption in both public and private sectors, making AIS a relevant research focus. The internationalization of AIS scholarship is further demonstrated by contributions from European countries such as Netherlands, Portugal, Belgium, and Germany, reflecting a strong academic foundation and intra-European cooperation in accounting research. This global diversification enriches the field with cross-cultural insights, helping to contextualize AIS adoption and operational outcomes across different regulatory, economic, and technological environments.

Implications for Theory and Practice

From a theoretical perspective, this study confirms that AIS research is no longer confined to traditional financial accounting systems but is rapidly evolving toward interdisciplinary integration. The increasing presence of keywords and scholars focused on technology adoption, system usability, and performance outcomes suggests that the field is embracing frameworks from information systems, organizational behavior, and innovation management. Future research can benefit from synthesizing these diverse theoretical lenses to develop holistic models that capture both the technical and behavioral aspects of AIS implementation and efficiency impact. In terms of practical implications, the findings underscore the growing importance of technological capabilities in achieving operational efficiency. As firms face greater pressure to streamline processes, reduce costs, and make data-driven decisions, AIS must evolve into intelligent systems that integrate real-time analytics, AI, and blockchain for enhanced transparency, control, and predictive insight. Organizations, especially in developing countries, should invest in modernizing their AIS infrastructure and building the human capital necessary to extract value from these systems. Furthermore, the collaborative patterns revealed in this study suggest that partnerships—between academia and industry, and across borders—can accelerate innovation and best practice sharing in AIS deployment.

Future Research Directions

This bibliometric analysis highlights several potential avenues for future research. First, while studies on technological advancements such as AI and blockchain in AIS are emerging, they remain relatively underrepresented. Scholars could explore empirical case studies, impact assessments, and adoption models to better understand how these technologies influence operational efficiency across different sectors. Second, more longitudinal and comparative studies are needed to assess the long-term impact of AIS implementations in varying organizational and cultural contexts. Third, given the rise in cross-border collaboration, researchers may investigate the role of institutional factors—such as regulation, education, and digital infrastructure—in

shaping AIS effectiveness. Moreover, the relatively high presence of developing countries in the co-authorship and publication network indicates a fertile ground for examining how AIS adoption contributes to economic development, transparency, and governance improvements. Integrating public sector studies, nonprofit organizations, and SMEs into AIS research could also broaden the applicability and relevance of findings.

4. CONCLUSION

This study has provided a comprehensive bibliometric analysis of the academic literature concerning the role of Accounting Information Systems (AIS) in enhancing company operational efficiency. The findings reveal that AIS remains a central theme in accounting and management research, with increasing integration of emerging technologies such as artificial intelligence, big data, and blockchain. The evolution of research topics from foundational accounting functions toward technology-driven efficiency reflects a dynamic and expanding field. Collaboration patterns indicate a global scholarly effort, with the United States, Indonesia, China, and several Middle Eastern countries emerging as key contributors. Influential authors and clusters demonstrate both the depth and diversity of research in this area, spanning technical, behavioral, and strategic perspectives. Ultimately, this study not only maps the intellectual and thematic landscape of AIS research but also highlights opportunities for future exploration—particularly in the adoption of advanced technologies, cross-cultural implementations, and the performance implications of AIS in various organizational contexts.

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