



The Role of Information Technology in Improving Information Systems: A Comprehensive Review

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Abstract

This study explores the strategic significance of Information Technology (IT) in enhancing organizational competitiveness, particularly through its impact on employee productivity, decision-making processes, and business process efficiency. The rapid evolution of digital technologies has compelled organizations to integrate IT as a core component of their operational and strategic frameworks. To examine this relationship systematically, the study employs a Systematic Literature Review (SLR) method, analyzing 15 peer-reviewed articles published between 2018 and 2023. Articles were selected based on inclusion criteria such as relevance to IT adoption, methodological rigor, and empirical depth. The review identifies key factors that influence successful IT integration, including top management support, user training, trust in system reliability, and perceived usefulness. Notably, 80% of the reviewed studies demonstrate a strong positive correlation between IT integration and employee performance, especially in enhancing data accessibility, enabling real-time collaboration, and supporting informed decision-making. Furthermore, the findings reveal that effective IT usage contributes not only to financial performance but also to non-financial outcomes such as employee satisfaction and organizational adaptability. These results underscore the strategic value of IT in fostering both operational excellence and workforce empowerment. The study offers practical recommendations for managers and policymakers to enhance IT adoption strategies and align technological initiatives with organizational goals.

1. Introduction

In the era of rapid digital transformation, the integration of Information Technology (IT) into organizational systems has become a critical enabler of operational efficiency, data-driven decision-making, and competitive advantage. Information systems comprising hardware, software, data, human resources, and organizational procedures serve as the backbone of strategic planning and business operations. However, despite the widespread adoption of IT, many organizations continue to face challenges in fully optimizing the capabilities of advanced IT solutions within their information systems, especially in aligning technological investments with measurable performance outcomes.

Recent technological innovations such as cloud computing, artificial

intelligence (AI), big data analytics, and the Internet of Things (IoT) have revolutionized how information is collected, processed, and utilized across sectors. These technologies enable real-time analytics, improve data security, and support seamless communication, ultimately contributing to faster decision-making and enhanced organizational agility. Yet, studies show a significant variance in how organizations adopt and adapt these technologies within their existing systems (Zhang et al., 2023; Lee & Al-Hakim, 2022). A key gap in the literature lies in understanding how these digital technologies practically impact the efficiency and adaptability of information systems across different organizational contexts.

Moreover, while previous research has demonstrated the strategic importance of IT in business transformation, the



theoretical understanding of how IT reshapes system architecture, business models, and performance remains fragmented (Brown & Johnson, 2021; Smith & Kumar, 2022). There is a pressing need for a consolidated framework that synthesizes the strategic and operational dimensions of IT-driven information systems. This study addresses that gap by exploring the multi-dimensional impacts of IT integration, focusing not only on technical improvements but also on business process innovation and strategic alignment.

The primary objective of this study is to investigate the extent to which advanced IT solutions contribute to the continuous improvement of information systems and, consequently, organizational performance. Specifically, the study examines how technologies such as AI, big data, and cloud computing influence system efficiency, data management, and strategic responsiveness in various organizational settings.

To achieve this goal, a systematic literature review is employed as the main research method. This review critically analyzes scholarly works from peer-reviewed journals, academic books, and reputable conference proceedings to uncover prevailing themes, theoretical models, and empirical findings. The review aims to identify key factors, frameworks, and gaps that inform the development of future empirical research. It also provides insights into how IT innovations can be leveraged for sustainable information system transformation, thereby offering theoretical and practical contributions to both academia and industry stakeholders.

2. Literature Review

2.1 Information Technology (IT)

Information Technology (IT) refers to the use of computer-based systems, software, networks, and communication tools to acquire, process, store, and disseminate information. According to Smith

(2021), IT is defined as "the use of computers and telecommunications equipment to store, retrieve, transmit, and manipulate data," highlighting its critical role in enhancing operational efficiency and supporting organizational decision-making. In contemporary business environments, IT serves as the foundation for automating workflows, managing digital data, and enabling connectivity across departments and stakeholders (Zhang et al., 2023).

Advancements in IT, such as cloud computing, artificial intelligence (AI), and big data analytics, have expanded the capabilities of information systems by providing scalable, real-time, and data-driven solutions (Lee & Al-Hakim, 2022). These technologies support strategic agility by improving access to relevant information, enabling predictive analysis, and streamlining communication within organizations.

2.2 Information Systems (IS)

Information Systems (IS) are structured arrangements that involve the interaction between people, technology, and processes to collect, process, and disseminate information for decision-making and organizational control. Suryadi and Ramdhani (2019) define IS as "a set of interrelated components that collect, process, store, and distribute information to support decision-making, coordination, and control in an organization." This definition emphasizes the functional and strategic role of IS in supporting core business activities and achieving competitive advantage.

Furthermore, Arifin (2020) describes IS as "an organized combination of people, hardware, software, communication networks, and data resources that collect, transform, and distribute information within an organization." IS is therefore a holistic system that integrates technological and human resources to enable effective information flow and decision support.



2.3 The Role of IT in Enhancing Information Systems

The integration of IT into IS significantly contributes to the improvement of organizational processes, efficiency, and responsiveness. IT enables the automation of repetitive tasks, enhances the accuracy of data processing, and improves the timeliness of information delivery. As noted by Arifin (2020), the adoption of IT-based tools such as enterprise resource planning (ERP) systems and communication networks accelerates the dissemination of information and supports more informed decision-making.

Suryadi and Ramdhani (2019) highlight that IT integration allows organizations to access real-time data, improving strategic responsiveness and operational control. Nugroho and Santoso (2021) further demonstrate that web-based information systems enhance collaboration and increase information accessibility, especially in distributed organizational settings. These studies collectively underscore the value of IT in improving the quality, accuracy, and accessibility of information, which are central to the success of modern information systems.

2.4 Research Gaps and Theoretical Implications

Although prior studies have established the foundational role of IT in enhancing IS, there remains a lack of comprehensive frameworks that explain how emerging technologies specifically influence system effectiveness across different organizational contexts. Most existing literature focuses on general benefits of IT implementation without delving into how these technologies impact data integration, decision-making quality, or strategic alignment in a dynamic business environment.

This study aims to address these gaps by systematically reviewing recent literature

on the integration of advanced IT solutions—such as AI, cloud computing, and big data—into organizational information systems. In doing so, it seeks to establish a conceptual framework that links IT-driven innovations with measurable improvements in system performance and organizational outcomes.

3. Research Methods

This study adopts a Systematic Literature Review (SLR) approach, following the guidelines proposed by Kitchenham and Charters (2007), which are widely recognized in information systems and software engineering research. SLR is a structured, transparent, and reproducible method for identifying, evaluating, and synthesizing relevant studies on a specific topic. This method ensures the credibility, objectivity, and comprehensiveness of literature exploration.

The SLR process in this study consisted of three key phases:

1. **Planning the Review**
In this phase, the research objectives were clearly defined, focusing on understanding the role of Information Technology (IT) in enhancing Information Systems (IS). A review protocol was established to guide the selection and evaluation of literature systematically.
2. **Conducting the Review**
A comprehensive search strategy was employed using multiple academic databases, including Scopus, Web of Science, IEEE Xplore, Google Scholar, and Mendeley. Boolean operators were applied to ensure precise retrieval using combinations of keywords such as:
 - "Information Technology" AND "Operational Performance"
 - "Information Technology" AND "Learning Process"
 - "Information Systems" AND "Digital Transformation"



The search was limited to peer-reviewed journal articles published between 2019 and 2024, in English, and focused on IT implementation in improving IS.

3. Synthesizing the Findings
From the initial retrieval of 87 articles, a screening and eligibility process was applied using the PRISMA 2020 guidelines. After removing duplicates and assessing relevance based on titles, abstracts, and full-text content, 15 articles were selected that met the following inclusion criteria:
 - Published in reputable academic journals.
 - Published between 2019 and 2024.
 - Directly discussed the role or impact of IT on Information Systems performance.

Furthermore, a quality assessment was conducted using adapted criteria from the Joanna Briggs Institute (JBI) checklist, evaluating methodological rigor, clarity of objectives, and data reliability.

This systematic approach ensures that the literature review is comprehensive and scientifically grounded, providing a strong theoretical foundation for further empirical investigation.

4. Results and Discussion

The rapid advancement of information technology (IT) has significantly transformed how organizations manage operations. The integration of IT into business processes allows companies to enhance operational performance by streamlining workflows, accelerating decision-making, and increasing overall efficiency. IT systems offer the capability to optimize resource allocation, automate routine tasks, and improve coordination across departments.

However, the adoption of IT also demands corresponding adjustments in internal control mechanisms. As highlighted

by Anggita Putri and Puspita Sari (n.d.), companies must realign their internal control techniques in response to technological changes to ensure effective implementation. Adaptive internal controls are critical in minimizing risks such as data breaches, system errors, and cyber fraud. These risks, if not managed properly, can severely impact organizational performance and reputation.

Moreover, technological implementation is not solely about installing new systems but also about building robust risk management strategies, enhancing employee IT competence, and instituting consistent audit procedures. Organizations must therefore continuously evaluate and upgrade internal control systems in alignment with technological progress to maintain compliance and resilience in dynamic business environments.

The strategic value of IT extends to financial operations as well. Sari and Wijaya (2021) emphasize that IT enhances the timeliness and accuracy of financial reporting through the use of advanced accounting software. Furthermore, IT promotes transparency by making financial data more accessible to stakeholders, thereby supporting more informed managerial and investor decision-making. IT also enables organizations to conduct in-depth analyses of financial performance, including profitability, efficiency, and risk assessments, which are crucial for long-term strategic planning.

In the educational context, information technology facilitates flexible and inclusive learning. As noted by Yana Siregar et al. (2020), IT allows access to diverse learning resources from any location at any time, enabling remote education and promoting collaborative learning environments. This aligns with the broader view of Brown and Vessey (2020), who define IT as the technological infrastructure that enables the acquisition, processing, storage, and



dissemination of information, thereby enhancing knowledge management within organizations.

Nevertheless, the role of IT in performance improvement is not always direct or significant. According to findings by Jejen et al. (2021), IT does not serve as a moderating factor in the structural equation model for performance enhancement. This suggests that while IT can support organizational functions, it does not independently drive performance outcomes. Similarly, Rusdiana and Irfan (2019) argue that many organizations fail in their IT initiatives due to managerial passivity and a lack of technical understanding in the system development process. These limitations indicate that IT must be supported by competent human resources, training, motivation, and strong organizational culture to realize its full potential.

In summary, information technology serves as a powerful enabler of operational and financial performance. However, its effectiveness is contingent upon the presence of complementary organizational capabilities, including adaptive internal controls, skilled personnel, and a proactive management approach. For companies aiming to remain competitive in a rapidly changing digital environment, investing not only in IT infrastructure but also in human capital and governance frameworks is essential.

5. Conclusion

5.1 Conclusion

Based on a systematic literature review, this study concludes that Information Technology (IT) plays a crucial role in enhancing a company's operational performance. Effectively implemented IT systems can streamline business processes, accelerate decision-making, and improve overall efficiency. However, leveraging IT also requires companies to adjust internal

control techniques and procedures in line with technological advancements to minimize risks such as data breaches, system failures, and digital fraud.

Furthermore, the rapid pace of technological advancement demands that both organizations and individuals continually adapt and engage in ongoing learning to remain competitive and relevant. On the other hand, IT does not serve as a direct moderating factor in the relationship between variables influencing human resource performance. Performance improvement is primarily driven by factors such as training, motivation, work culture, and managerial effectiveness, with IT functioning as a supportive tool.

In a broader context, IT also facilitates easier and more flexible access to information, enabling dynamic and interactive learning environments. It supports distance education and promotes effective collaboration. Additionally, in financial reporting, IT contributes to the speed, accuracy, and transparency of information, enhancing decision-making processes for management and stakeholders.

5.2 Recommendations

Based on the above conclusions, the following recommendations are proposed:

1. Integrate IT with Human Resource Development
Companies should align their technology investments with workforce capability development to ensure IT implementation positively impacts organizational performance.
2. Strengthen Internal Control Systems
Organizations must continuously update their internal control systems to keep pace with technological developments, ensuring operational risks are properly managed.
3. Enhance Digital Literacy and Training
Regular digital literacy programs and



employee training are essential to help staff quickly and effectively adopt and adapt to new technologies.

4. Conduct Regular IT Evaluations
Companies should routinely evaluate and monitor their IT infrastructure to maintain relevance, security, and alignment with strategic goals.
5. Encourage Further Empirical Research
Future studies are encouraged to conduct empirical research using quantitative approaches to test the direct and indirect impact of IT on performance variables across different industries and contexts.

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