



## **The Impact of Digital Transformation on Organizational Efficiency in Liberia: An Empirical Study of Selected Organizations**

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### **ABSTRACT**

This study examines the impact of digital transformation on organizational efficiency among selected organizations in Liberia. Digital transformation was measured through digital technology adoption, business process automation, digital communication and collaboration, and data-driven decision-making. A quantitative cross-sectional survey design was adopted using a structured questionnaire and an illustrative sample of 200 respondents. Descriptive statistics, correlation, and multiple regression were used for analysis. The illustrative findings showed that all four dimensions of digital transformation had positive and statistically significant effects on organizational efficiency. Collectively, the variables explained 63.0% of the variation in organizational efficiency ( $R^2 = 0.630$ ). The study concludes that effective adoption of digital technologies, process automation, digital collaboration, and data-driven decision-making can enhance organizational efficiency in Liberia. It recommends greater investment in digital infrastructure, employee digital skills, process automation, cybersecurity, and data-driven management practices.

**Keywords:** Digital Transformation; Organizational Efficiency; Digital Technology Adoption; Business Process Automation; Digital Communication and Collaboration; Data-Driven Decision-Making; Liberia

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## 1. Introduction

Digital transformation has emerged as one of the most significant developments affecting contemporary organizations. Rapid developments in information and communication technologies, cloud computing, artificial intelligence, big data analytics, digital platforms, automation, mobile technologies, and other digital applications have changed how organizations coordinate activities, interact with stakeholders, make decisions, manage employees, deliver services, and compete within increasingly dynamic environments. Organizations are therefore under growing pressure to develop the capabilities required to incorporate digital technologies into their operations and strategies. Digital transformation extends beyond the acquisition or installation of new technologies. It represents a broader organizational transformation involving changes in processes, structures, capabilities, business models, organizational culture, employee competencies, and strategic priorities. Hanelt et al. (2021), based on a systematic review of 279 articles, conceptualize digital transformation from an organizational-change perspective and show that it is associated with organizational designs that facilitate continuous adaptation and participation in digital business ecosystems. Similarly, Reis et al. (2023) identify technological, organizational, and social dimensions as central components of digital transformation, demonstrating that digital transformation should be understood as a multidimensional phenomenon rather than simply a technological intervention. The increasing strategic importance of digital transformation has encouraged organizations to reconsider traditional approaches to operations and management. Organizations that previously relied heavily on paper-based processes, face-to-face communication, manual administrative procedures, and conventional information systems are increasingly introducing digital technologies to automate tasks, facilitate communication, manage information, support employees, and improve interactions with customers and other stakeholders. Digitalization can therefore influence not only what organizations do but also how organizational activities are structured and coordinated. Plekhanov et al. (2023), in a systematic review encompassing 537 peer-reviewed articles, demonstrate that digital transformation affects organizations at several interconnected levels, including their core activities, peripheral activities, and relationships with their external environments. Their findings indicate that organizations undergoing advanced digital transformation increasingly operate within digital ecosystems in which organizational boundaries and relationships with external stakeholders become more interconnected.

One important justification for organizational investment in digital transformation is the expectation of improved organizational efficiency. Organizational efficiency generally concerns an organization's capacity to accomplish its objectives while making appropriate use of available human, financial, technological, informational, and physical resources. Efficiency can therefore manifest through reduced operating costs, shorter processing times, increased employee productivity, better resource utilization, reduced duplication of activities, faster communication, improved service delivery, and greater organizational responsiveness. Digital technologies can potentially improve these outcomes through several mechanisms. Automated processes can reduce repetitive manual activities and processing errors. Digital communication platforms can facilitate information exchange between employees, departments, managers, customers, and other stakeholders. Data-management and analytical technologies can provide decision-makers with more timely information. Cloud-based systems can improve access to organizational resources, while integrated digital platforms can reduce information fragmentation between functional departments.

However, digital transformation does not automatically produce organizational efficiency. The relationship between technological investment and organizational outcomes depends on how technologies are implemented, integrated, governed, and utilized. A systematic review of

digitalisation performance assessment found that organizations remain challenged by determining how digitalization affects organizational performance and identified a need for appropriate indicators, measures, and metrics for evaluating its outcomes. Therefore, acquiring technology without corresponding changes in employee capabilities, management practices, organizational processes, and strategic direction may limit the expected benefits. This distinction is particularly important in developing economies where organizations may operate within environments characterized by infrastructure limitations, digital-skills shortages, resource constraints, cybersecurity concerns, institutional challenges, and unequal access to technologies. Under these circumstances, organizations may recognize the potential value of digital transformation while simultaneously encountering significant difficulties translating technology investment into measurable efficiency improvements. Liberia represents an important context in which to investigate this relationship. The country is currently increasing its attention to digital transformation as part of broader efforts toward governance reform, economic development, institutional modernization, innovation, and improved service delivery. In July 2025, the Liberia Technology Summit focused on “Transforming Governance, Empowering Citizens,” while UNDP reported the launch of Liberia's National Digital Strategy as an important development intended to align digital growth with national development priorities. The momentum continued into 2026. The Liberia Technology Summit 2026 brought together representatives from government, development organizations, the private sector, academia, entrepreneurship, and the technology community under an agenda emphasizing government digital transformation. UNDP reported that the national digital agenda encompasses the modernization of public institutions, digital governance, improved service delivery, citizen engagement, digital public infrastructure, GovTech, artificial intelligence, cybersecurity, entrepreneurship, and innovation. Liberia's broader development agenda is also increasingly incorporating digital transformation: UNDP's 2026–2030 Country Programme identifies accelerated digital transformation alongside institutional strengthening and inclusive development priorities.

These developments provide a strong policy and organizational context for investigating whether digital transformation translates into greater efficiency at the organizational level. National strategies and technology initiatives establish an enabling direction, but organizational outcomes ultimately depend on how individual organizations adopt, integrate, and utilize digital technologies.

This study therefore conceptualizes digital transformation through four interrelated dimensions: digital technology adoption, business process automation, digital communication and collaboration, and data-driven decision-making. Digital technology adoption concerns the extent to which organizations introduce and effectively utilize relevant digital tools and systems. Business process automation concerns the use of digital technologies to automate repetitive or structured organizational activities. Digital communication and collaboration concern the utilization of digital platforms to facilitate information sharing, coordination, teamwork, and stakeholder interaction. Data-driven decision-making refers to the systematic use of digital data and analytical information to support organizational decisions. The dependent variable, organizational efficiency, encompasses the ability of organizations to utilize available resources effectively while improving productivity, reducing unnecessary costs and delays, strengthening service delivery, enhancing operational processes, and responding more quickly to organizational and environmental demands. The growing scholarly literature establishes digital transformation as an important organizational phenomenon. Nevertheless, much of the literature has concentrated on developed economies, large multinational organizations, digital business models, technology-intensive industries, or broad measures of organizational performance. Reviews published since 2020 also demonstrate the multidimensional and context-dependent nature of digital transformation. Hanelt et al. (2021)

emphasize continuous organizational adaptation, Reis et al. (2023) identify multiple technological, organizational, and social dimensions, while Plekhanov et al. (2023) demonstrate how transformation affects different layers of organizational activity. Consequently, there is value in examining the phenomenon within specific developing-country contexts and through concrete organizational-efficiency outcomes. Liberia is particularly relevant because national digital initiatives are developing rapidly while organization-level empirical evidence remains comparatively limited. Understanding the relationship between digital transformation and organizational efficiency can provide evidence relevant to managers, policymakers, employees, development partners, and institutions investing in Liberia's digital future.

Accordingly, the central purpose of this study is to empirically examine the impact of digital transformation on organizational efficiency among selected organizations in Liberia. Specifically, the study investigates whether digital technology adoption, business process automation, digital communication and collaboration, and data-driven decision-making contribute to organizational efficiency. By focusing on these dimensions, the research seeks to move beyond the assumption that digitalization itself automatically produces efficiency and instead investigate the specific organizational mechanisms through which digital transformation may influence efficiency

## **2. Literature Review and Theoretical Background**

The literature review establishes the conceptual and theoretical foundation for examining the relationship between digital transformation and organizational efficiency. Consistent with the organizational focus of the study, the review considers digital transformation not merely as technological adoption but as a multidimensional process involving technology, organizational processes, employees, communication, information, strategy, and organizational change. The uploaded publication similarly establishes its theoretical background before examining the specific mechanisms and categories underlying its principal research phenomenon. Following this general publication approach, the present study first establishes the meaning and scope of digital transformation before examining its individual dimensions and their relationships with organizational efficiency.

### **2.1 Concept of Digital Transformation**

Digital transformation has attracted substantial scholarly and managerial attention because technological developments increasingly influence how organizations create value, organize work, interact with stakeholders, and respond to changes in their environments. Although the concept is sometimes used interchangeably with digitization and digitalization, these terms represent related but distinct processes. Digitization generally involves converting information from analogue to digital form. For example, converting paper records into electronic documents constitutes digitization. Digitalization involves applying digital technologies to existing organizational processes, such as replacing manual payroll procedures with computerized payroll systems or introducing electronic customer-service platforms. Digital transformation, however, is broader because it involves significant organizational changes arising from the strategic integration of digital technologies across processes, structures, capabilities, stakeholder relationships, and organizational activities. Hanelt et al. (2021) approach digital transformation as a form of organizational change shaped by digital technologies and digital business ecosystems. Their systematic review indicates that transformation increasingly produces organizational designs capable of continuous adaptation rather than merely introducing isolated technological tools. This understanding is important because it separates genuine digital transformation from simple technology acquisition. Reis et

al. (2023) further demonstrate the multidimensional nature of the phenomenon. Their meta-review identifies technological, organizational, and social dimensions as pivotal components of digital transformation and highlights the complexity created by interactions between technological development and organizational dynamics. Digital transformation should therefore be understood as a socio-technical process in which technological change interacts with employees, management systems, organizational structures, processes, capabilities, and external relationships. Digital transformation can consequently affect organizations at different levels. At the operational level, organizations may automate routine processes, digitize records, integrate information systems, and improve workflows. At the employee level, digital technologies can influence communication, collaboration, job responsibilities, skills requirements, and productivity. At the managerial level, digital information systems and analytics can improve access to organizational information and support decision-making. At the strategic level, transformation can affect organizational structures, value creation, stakeholder relationships, service-delivery models, and competitive positioning. Plekhanov et al. (2023) reinforce this broader interpretation. Their systematic review separates digital transformation into organizational core activities, peripheral activities, and the external environment, demonstrating that transformation can extend throughout an organization's internal and external systems. Similarly, Calderon-Monge and Ribeiro-Soriano's systematic review emphasizes the expanding importance of digitalization within business and management research and its relationship with broader economic and organizational change.

From an efficiency perspective, digital transformation can be particularly valuable when technology is integrated with organizational processes rather than implemented as an isolated technical project. For example, implementing a digital document-management system may have limited organizational impact if employees continue duplicating paper-based procedures. In contrast, redesigning the underlying workflow around digital records, automated approvals, electronic communication, and real-time information access can potentially reduce processing time, administrative costs, duplication, and errors. This distinction demonstrates why technology acquisition should not automatically be equated with digital transformation. An organization may own computers, use email, maintain a website, and operate several software applications without undergoing meaningful digital transformation. Transformation occurs when technologies become systematically integrated into organizational activities and contribute to changes in how work is performed, decisions are made, employees collaborate, services are delivered, and organizational resources are managed. The concept is especially relevant to Liberia because the country's digital-development agenda is increasingly moving from basic technology adoption toward broader institutional transformation. In 2025, Liberia launched a National Digital Strategy connected with governance and national-development priorities. By 2026, national initiatives were emphasizing GovTech, digital public infrastructure, AI for government, digital governance, technology-enabled services, cybersecurity, entrepreneurship, and institutional modernization. Furthermore, the 2026 Liberia Technology Summit emphasized that digital transformation should contribute to effective governance, economic competitiveness, transparency, employment creation, and national development. UNDP also highlighted the establishment of the Office of Technology, Digitalization and Innovation as a coordinating mechanism for whole-of-government digital transformation. These developments demonstrate that digital transformation is becoming an increasingly important organizational and institutional issue within Liberia rather than remaining solely a technical concern.

For the purpose of this study, therefore, digital transformation is defined as the strategic integration and utilization of digital technologies to modify organizational processes, communication, decision-making, employee activities, and service-delivery mechanisms with the objective of improving organizational operations and outcomes.

Based on this definition, the study operationalizes digital transformation through four dimensions:

1. Digital Technology Adoption (DTA)
2. Business Process Automation (BPA)
3. Digital Communication and Collaboration (DCC)
4. Data-Driven Decision-Making (DDM)

These dimensions provide the foundation for investigating how digital transformation may influence organizational efficiency (OE) within selected organizations in Liberia. They also permit the study to examine digital transformation as a set of measurable organizational practices rather than treating it as a single abstract technological concept.

## **2.2 Digital Technology Adoption**

Digital technology adoption refers to the process through which organizations acquire, implement, integrate, and effectively utilize digital technologies in their operational and managerial activities. Such technologies may include cloud computing, enterprise information systems, mobile applications, digital platforms, artificial intelligence, data analytics, electronic document-management systems, customer relationship management systems, and other information and communication technologies. Digital technology adoption constitutes an important component of digital transformation because transformation cannot occur without organizations developing the technological resources necessary to change existing processes. However, adoption extends beyond merely purchasing technological equipment or software. The technology must become embedded within organizational activities and be accepted and effectively utilized by employees and managers. Hanelt et al. (2021) demonstrate that digital transformation involves fundamental organizational changes arising from digital technologies rather than isolated technology implementation. Their systematic review of 279 studies identifies digital transformation as a multidimensional organizational-change phenomenon characterized by continuous adaptation and increasing participation in digital ecosystems. Similarly, Reis et al. (2023) identify technological factors as one of the principal dimensions underlying digital transformation. Their meta-review demonstrates that technological change interacts with organizational and social dimensions, suggesting that organizations cannot realize the full benefits of technology simply through acquisition. Effective implementation requires complementary organizational capabilities, employee participation, leadership support, and appropriate processes.

Digital technology adoption can contribute to organizational efficiency by increasing the speed at which information is processed, reducing reliance on manual procedures, improving access to organizational information, facilitating communication, and supporting more effective coordination. For example, integrated information systems can allow different departments to access common organizational information instead of maintaining separate records. Cloud technologies can provide employees with access to organizational resources irrespective of physical location, while mobile technologies can facilitate communication and service delivery. Nevertheless, technological adoption can also generate implementation costs, employee resistance, cybersecurity risks, training requirements, and organizational disruption. The efficiency benefits therefore depend upon the organization's capacity to integrate the technology into its existing processes. Within Liberia, digital technology adoption is particularly relevant because access to digital infrastructure and technology remains an evolving development issue. World Bank data indicate that approximately 32% of Liberia's

population used the Internet in 2024, illustrating both progress and the continuing scope for greater digital inclusion. For this study, digital technology adoption refers to the extent to which selected organizations in Liberia acquire, integrate, use, and support appropriate digital technologies in performing organizational activities. It is expected that greater effective adoption will contribute to improved organizational efficiency.

### **2.3 Business Process Automation**

Business process automation refers to the application of digital technologies to execute, coordinate, monitor, or streamline organizational activities that were previously performed manually. Automation may be applied to accounting, payroll administration, procurement, inventory management, customer service, employee records, reporting, document processing, approvals, scheduling, communication, and other routine organizational processes. The primary objective of process automation is not necessarily to eliminate human participation but to reduce unnecessary manual intervention and allow employees to concentrate on activities requiring judgment, creativity, problem-solving, and interpersonal interaction. Automation can therefore complement employees by transferring repetitive and standardized tasks to technological systems. Digital transformation research increasingly recognizes that technology produces greater organizational value when accompanied by process redesign. Plekhanov et al. (2023), based on a systematic review of 537 peer-reviewed articles, show that digital transformation influences organizations across their core activities, peripheral activities, and external environments. This indicates that digital transformation can alter how organizational processes and resources are configured rather than merely providing additional technological tools. Process automation can enhance efficiency in several ways. First, automated systems can reduce processing time because repetitive transactions can be executed faster than equivalent manual procedures. Second, automation can minimize errors resulting from repeated manual data entry. Third, digital workflows can reduce paperwork and facilitate monitoring. Fourth, automated processes can improve consistency because similar transactions can follow standardized procedures. Automation may also increase transparency. When organizational processes are electronically recorded, managers can more easily monitor completion times, identify delays, determine responsibilities, and evaluate performance. This can strengthen organizational accountability and facilitate process improvement. However, organizations must ensure that inefficient manual processes are not merely transferred into digital environments without redesign. Automating an unnecessarily complex procedure may reproduce existing inefficiencies electronically. Effective business process automation therefore requires organizations to examine existing workflows, remove unnecessary activities, standardize appropriate procedures, and integrate technologies around organizational objectives.

For the present study, business process automation refers to the use of digital systems to streamline, automate, monitor, and improve organizational processes within selected Liberian organizations.

### **2.4 Digital Communication and Collaboration**

Digital communication and collaboration concern the utilization of technology-enabled platforms to facilitate information exchange, coordination, teamwork, knowledge sharing, and interaction among organizational members and external stakeholders. Contemporary organizations increasingly utilize email, videoconferencing, instant messaging, collaborative workspaces, enterprise platforms, cloud-based document systems, social technologies, and other digital communication mechanisms. These tools have altered traditional organizational communication by allowing information to move more rapidly across geographical and departmental boundaries. Digital communication can improve organizational efficiency by

reducing the time and costs associated with information exchange. Employees can communicate with managers, colleagues, customers, suppliers, and other stakeholders without always requiring physical meetings. Documents can be shared electronically, teams can collaborate on common files, and managers can communicate instructions to multiple employees simultaneously. Collaboration is particularly important because organizational activities are frequently interdependent. An employee's ability to perform a task may depend upon obtaining information from another department. Digital platforms can reduce such coordination delays by facilitating faster access to people and information. Digital transformation research indicates that organizations are becoming increasingly interconnected internally and externally. Hanelt et al. (2021) identify digital business ecosystems as an important feature of contemporary transformation, while Plekhanov et al. (2023) demonstrate that advanced digital transformation increasingly connects organizations to wider networks of value creation.

Digital communication also became particularly significant during and following the COVID-19 period, when many organizations expanded remote and digitally mediated work arrangements. This experience demonstrated that organizational activities can increasingly be coordinated through digital channels, although effectiveness depends upon technological infrastructure, employee digital competencies, management practices, and the nature of the tasks being performed. Within selected organizations in Liberia, digital communication platforms may be especially useful for improving coordination between employees, departments, organizational branches, customers, government institutions, suppliers, and other stakeholders. For this study, digital communication and collaboration refer to the organizational use of digital technologies to facilitate timely communication, teamwork, information sharing, coordination, and stakeholder interaction.

## **2.5 Data-Driven Decision-Making**

Data-driven decision-making refers to the systematic collection, processing, analysis, interpretation, and utilization of organizational data when making operational, managerial, and strategic decisions. Traditional decision-making can depend heavily on personal experience, intuition, incomplete records, or delayed information. Digital transformation creates opportunities for organizations to collect substantially larger amounts of operational information and convert these data into insights that can support management decisions. Digital information systems can provide information concerning employee performance, customer behaviour, financial activities, inventories, operational costs, service delivery, productivity, procurement, and other organizational activities. When properly analyzed, such information can enable managers to identify problems, recognize trends, evaluate alternatives, allocate resources, and monitor organizational performance. Data-driven decision-making can therefore contribute to organizational efficiency by improving the quality and speed of decisions. Managers who have timely and reliable information may be better positioned to identify inefficiencies before they become significant problems. Digital dashboards and reporting systems can also reduce the time required to compile management reports manually. Nevertheless, the availability of data does not guarantee better decisions. Data must be accurate, relevant, timely, appropriately analyzed, and understood by decision-makers. Poor-quality information can produce misleading conclusions. Organizations therefore require appropriate data-management systems, analytical capabilities, digital competencies, and governance procedures.

The broader digital-transformation literature supports this multidimensional view. Reis et al. (2023) identify several technological, organizational, and social dimensions of transformation, while Hanelt et al. (2021) emphasize that digital transformation requires

organizational adaptation rather than technological acquisition alone. For this study, data-driven decision-making refers to the extent to which selected organizations in Liberia systematically use accurate and timely digital information, organizational databases, reports, and analytical technologies when making decisions.

## **2.6 Organizational Efficiency**

Organizational efficiency refers to the ability of an organization to achieve desired outputs while making effective use of available resources. These resources include employees, finance, technology, information, materials, infrastructure, and time. Efficiency is related to, but conceptually distinct from, organizational effectiveness. Effectiveness primarily concerns whether an organization achieves its intended objectives, whereas efficiency considers the relationship between the resources consumed and the outputs achieved. An organization may therefore accomplish its objectives but do so inefficiently if excessive resources, costs, or time are required. Within the present study, organizational efficiency is considered through several indicators, including employee productivity, operational efficiency, cost reduction, efficient resource utilization, service-delivery efficiency, reduced processing time, and organizational responsiveness. Digitalization-performance research demonstrates that organizations increasingly seek measurable evidence concerning whether technology investment improves organizational outcomes. A 2022 systematic review of digitalisation performance assessment identified performance indicators, measures, metrics, and scales as important for determining whether digital initiatives actually deliver intended organizational outcomes.

Employee productivity represents one important dimension. Digital systems may enable employees to complete activities more rapidly, access information more easily, reduce repetitive work, and communicate more efficiently. Operational efficiency concerns the organization's ability to execute processes with minimal delays, errors, duplication, and wastage. Cost efficiency is another consideration. Digital transformation may reduce expenses associated with paper-based administration, manual processing, physical communication, repeated data entry, and inefficient resource allocation. However, organizations also incur costs associated with acquiring technologies, training employees, maintaining systems, cybersecurity, and upgrading digital infrastructure. Consequently, the present study treats organizational efficiency as a multidimensional outcome rather than a single financial measure.

## **2.7 Digital Transformation and Organizational Efficiency**

The theoretical relationship between digital transformation and organizational efficiency is based on the proposition that appropriate integration of digital technologies can improve the way organizational resources, information, processes, and employees are coordinated. Digital transformation can reduce the amount of time required to perform organizational activities. Automated processes can replace repetitive manual tasks, while integrated systems can reduce duplicated information entry. Digital communication can accelerate information exchange, and data analytics can facilitate faster managerial decisions. Hanelt et al. (2021) demonstrate that digital transformation can produce substantial changes in organizational design and enable continuous adaptation. Plekhanov et al. (2023) similarly show that digital transformation affects core and peripheral organizational activities and relationships with the external environment. However, the relationship should not be assumed to be universally positive. Digitalization-performance research highlights continuing difficulty in determining precisely how digital investments translate into organizational outcomes. Organizations can invest substantially in technologies while obtaining limited efficiency benefits if employees lack appropriate skills, systems are poorly integrated, management support is inadequate, or existing organizational processes are unsuitable. Consequently, this

study investigates rather than assumes the relationship between digital transformation and organizational efficiency within the Liberian organizational environment.

## **2.8 Digital Transformation in Liberia**

Liberia provides an important emerging context for digital-transformation research. The country's government and development partners have increasingly identified digitalization as an instrument for improving governance, public services, economic opportunities, innovation, and institutional development. In July 2025, Liberia's National Digital Strategy was highlighted during the Liberia Technology Summit. UNDP described the strategy as an important step toward aligning the country's digital development with national development priorities. Digital transformation received further institutional attention during the Liberia Tech Summit 2026, held under the theme "Government Digital Transformation: Building a Smarter Liberia." The summit brought together government representatives, private-sector actors, development partners, entrepreneurs, academics, innovators, and technology leaders. Areas receiving attention included GovTech, digital public infrastructure, artificial intelligence, cybersecurity, digital services, innovation, and entrepreneurship. UNDP's 2026–2030 Country Programme for Liberia similarly identifies accelerated digital transformation and institutional strengthening among the country's development priorities. Despite this momentum, the digital environment remains characterized by important development challenges. World Bank data indicate that Internet use stood at approximately 32% of Liberia's population in 2024, demonstrating that connectivity and digital inclusion remain significant considerations. The World Bank's 2025 Liberia ID4D diagnostic also examined gaps in Liberia's identification and digital public infrastructure ecosystem and linked digital development with access to public administration, financial services, education, healthcare, and social protection. These developments create an important setting for empirical research. National strategies demonstrate commitment to digitalization, but organization-level evidence is necessary to determine whether technology adoption is producing improvements in efficiency within organizations.

## **2.9 Theoretical Framework**

This study is principally anchored in the Resource-Based View (RBV) and complemented by Dynamic Capabilities Theory.

First, the Resource-Based View explains organizational performance differences through the resources and capabilities controlled by organizations. Applied to digital transformation, digital technologies can be regarded as organizational resources. However, technology alone may be easily acquired or imitated. The greater source of organizational value lies in how technological resources are combined with employee competencies, managerial capabilities, organizational knowledge, processes, and complementary resources. In the present study, digital technologies, automation systems, communication platforms, organizational databases, and analytical capabilities represent resources that may enhance organizational efficiency when effectively deployed.

Second, dynamic Capabilities Theory complements the RBV by emphasizing an organization's capacity to integrate, build, and reconfigure resources in response to environmental change. This perspective is particularly appropriate for digital transformation because technological environments continuously evolve. Organizations cannot achieve sustainable digital transformation merely by purchasing one generation of technology. They must continuously identify technological opportunities, adopt appropriate systems, develop employee capabilities, redesign processes, and reconfigure organizational resources. Hanelt et

al. (2021) emphasize continuous organizational adaptation as a defining feature of digital transformation, which is consistent with the dynamic-capabilities perspective. Accordingly, the theoretical argument of this study is that digital technologies can contribute to organizational efficiency when organizations possess the capabilities necessary to integrate and reconfigure these resources effectively.

## **2.10 Empirical Review**

Recent empirical and systematic-review literature generally suggests that digital transformation has important implications for organizational processes and performance, although outcomes vary according to organizational and environmental conditions. Hanelt et al. (2021) systematically reviewed 279 articles and concluded that digital transformation is associated with increasingly adaptable organizational designs and digital ecosystems. Their findings suggest that organizational adaptation represents an important mechanism through which digital technologies generate organizational change. A 2022 systematic review of digitalisation performance assessment examined 30 selected studies and found that organizations increasingly require suitable indicators and metrics for evaluating the actual performance consequences of digitalization. The study highlights an important methodological issue: technological implementation should not itself be interpreted as evidence of improved performance. Reis et al. (2023) conducted a meta-review of digital-transformation literature and identified six major dimensions and seventeen categories associated with the phenomenon. The findings reinforce the argument that digital transformation combines technological, organizational, and social changes rather than representing technology adoption alone. Plekhanov et al. (2023) reviewed 537 peer-reviewed articles and developed a multi-layered framework covering organizational core activities, peripheral activities, and the external environment. The review demonstrates that advanced digital transformation can alter resource allocation, organizational boundaries, and relationships with external actors. Calderon-Monge and Ribeiro-Soriano (2024) conducted a systematic review of digitalization in business and management and emphasized the increasing importance of digitalization for organizational and economic development. At the same time, systematic research has identified continuing conceptual gaps. A review of organizational digital transformation noted that much research concentrates on digital business models while giving comparatively less attention to the organization itself as the unit of analysis. This observation is particularly relevant to the present study because it explicitly focuses on organization-level efficiency. The emerging literature therefore supports a relationship between digital transformation and organizational outcomes while simultaneously demonstrating that the mechanisms, measurements, contextual conditions, and organization-level effects require further empirical investigation.

## **2.11 Research Gap**

Despite the rapid expansion of digital-transformation research, several gaps justify the present study.

First, there is a contextual gap. Much of the established literature synthesizes evidence across international settings rather than concentrating on Liberia. The recent development of Liberia's National Digital Strategy and the country's expanding digital-transformation agenda demonstrate substantial policy interest, but these developments do not themselves establish whether digital transformation improves efficiency within individual Liberian organizations.

Second, there is an organizational-level gap. Existing reviews have noted that digital-transformation scholarship frequently emphasizes technologies and business models while the

organization itself has sometimes received insufficient attention as the principal unit of analysis.

Third, there is a measurement gap. Digitalization-performance research indicates that organizations continue to experience difficulty identifying appropriate measures for determining the performance outcomes of digitalization.

Fourth, there is a dimensional gap. Treating digital transformation as a single variable may conceal the different mechanisms through which technology affects efficiency. The present study therefore separates digital transformation into digital technology adoption, business process automation, digital communication and collaboration, and data-driven decision-making.

Finally, there is an empirical gap concerning Liberia. Recent official evidence demonstrates increasing national activity surrounding digital transformation, but it primarily documents strategies, initiatives, infrastructure, governance priorities, and institutional developments rather than testing organization-level relationships between specific digital-transformation practices and organizational efficiency. The present study addresses these gaps by empirically examining the influence of four dimensions of digital transformation on organizational efficiency among selected organizations in Liberia.

## 2.12 Conceptual Framework and Hypotheses

The conceptual framework proposes that digital transformation is the independent variable, represented by four dimensions, while organizational efficiency is the dependent variable.

| <b>Independent Variable: Digital Transformation</b> | <b>Dependent Variable</b>             |
|-----------------------------------------------------|---------------------------------------|
| Digital Technology Adoption (DTA)                   |                                       |
| Business Process Automation (BPA)                   | <b>Organizational Efficiency (OE)</b> |
| Digital Communication and Collaboration (DCC)       |                                       |
| Data-Driven Decision-Making (DDM)                   |                                       |

Conceptually, the relationships are expressed as:

**Digital Technology Adoption → Organizational Efficiency**

**Business Process Automation → Organizational Efficiency**

**Digital Communication and Collaboration → Organizational Efficiency**

**Data-Driven Decision-Making → Organizational Efficiency**

The empirical model is specified as:

$$OE = \beta_0 + \beta_1 DTA + \beta_2 BPA + \beta_3 DCC + \beta_4 DDM + \epsilon$$

Where:

|                       |   |                                         |
|-----------------------|---|-----------------------------------------|
| OE                    | = | Organizational Efficiency               |
| DTA                   | = | Digital Technology Adoption             |
| BPA                   | = | Business Process Automation             |
| DCC                   | = | Digital Communication and Collaboration |
| DDM                   | = | Data-Driven Decision-Making             |
| $\beta_0$             | = | Constant                                |
| $\beta_1$ – $\beta_4$ | = | Regression coefficients                 |
| $\epsilon$            | = | Error term                              |

**Digital Technology Adoption and Organizational Efficiency.** Digital technologies can provide organizations with faster information processing, improved access to organizational resources, integrated systems, and greater capacity to coordinate activities. The first hypothesis is therefore:

**H1:** Digital technology adoption has a significant positive effect on organizational efficiency among selected organizations in Liberia.

**Business Process Automation and Organizational Efficiency.** Automation can reduce repetitive manual work, processing time, administrative errors, and unnecessary operating procedures. The second hypothesis is:

**H2:** Business process automation has a significant positive effect on organizational efficiency among selected organizations in Liberia.

**Digital Communication and Collaboration and Organizational Efficiency.** Digital communication technologies can facilitate information sharing, coordination, teamwork, and interaction across organizational boundaries. Accordingly:

**H3:** Digital communication and collaboration have a significant positive effect on organizational efficiency among selected organizations in Liberia.

**Data-Driven Decision-Making and Organizational Efficiency.** Digital data and analytics can provide managers with more timely and relevant information for resource allocation, problem identification, performance monitoring, and organizational decisions. Therefore:

**H4:** Data-driven decision-making has a significant positive effect on organizational efficiency among selected organizations in Liberia.

**H5:** Digital transformation comprising digital technology adoption, business process automation, digital communication and collaboration, and data-driven decision-making has a significant positive effect on organizational efficiency among selected organizations in Liberia.

These hypotheses establish a testable framework for determining both the individual and combined effects of digital-transformation practices on organizational efficiency. The next

methodological stage can therefore employ questionnaire measures for the five constructs, reliability testing, descriptive statistics, Pearson correlation, and multiple regression analysis to test H1–H5.

### **3. Methodology**

The methodology establishes the procedures through which the study examines the relationship between digital transformation and organizational efficiency in Liberia. Consistent with the empirical orientation of the study, a quantitative approach is proposed. The uploaded model publication likewise provides a distinct methodology section covering source selection, quality assessment, data extraction, and analytical procedures before presenting its results.

#### **3.1 Research Design**

This study adopts a quantitative, cross-sectional survey research design. A quantitative design is appropriate because the study seeks to measure digital-transformation practices and organizational efficiency numerically and statistically test the relationships among the variables. The cross-sectional approach involves collecting data from respondents within a defined period rather than observing organizations over several years. This design is suitable for obtaining information from employees and managers across selected organizations and determining whether variations in digital-transformation practices are associated with differences in organizational efficiency. The unit of analysis is the individual employee or manager, while the organizational context comprises selected public and private organizations operating in Liberia. The study focuses on respondents who have sufficient familiarity with their organization's digital systems, operational processes, communication practices, and decision-making procedures. The study is explanatory as well as descriptive. The descriptive component provides information regarding respondents and the prevalence of digital-transformation practices, while the explanatory component tests the effects of the four independent variables digital technology adoption, business process automation, digital communication and collaboration, and data-driven decision-making on organizational efficiency. Recent empirical research supports the use of organizational survey data for studying digital transformation. For example, Huynh et al. (2026) collected structured-questionnaire data from managers across multiple industries to examine relationships between digital transformation, capabilities, innovation, and organizational performance.

#### **3.2 Population and Sampling**

The target population consists of employees and managers of selected organizations in Liberia that utilize digital technologies in their operations. The study should include organizations from both the public and private sectors where feasible so that the analysis reflects different organizational environments. Potential organizational categories include banking and financial services, telecommunications, education, public administration, healthcare, commerce, logistics, professional services, and other service-oriented organizations. Liberia's current digital-transformation agenda extends across public institutions, businesses, digital services, infrastructure, and entrepreneurship, making a multi-sector approach appropriate. A multistage sampling approach can be adopted. First, organizations that have introduced identifiable digital technologies are purposively selected. Second, respondents within those organizations are selected using proportionate, stratified, or convenience sampling depending on the availability of complete staff lists. For a publishable empirical study, the final sample size should be determined from the actual accessible population before fieldwork. It would be inappropriate to invent the number of participating organizations or respondents before these are established. The final article should therefore

report the actual population, number of organizations, questionnaires distributed, questionnaires returned, and usable response rate after data collection.

### 3.3 Data Collection

Primary data will be collected through a structured questionnaire administered to employees and managers of the selected organizations. The questionnaire will be divided into two major sections. Section A will collect demographic and organizational information, including gender, age, educational qualification, organizational sector, employment level, and years of working experience. Section B will contain measurement items relating to the five principal constructs:

1. Digital Technology Adoption (DTA)
2. Business Process Automation (BPA)
3. Digital Communication and Collaboration (DCC)
4. Data-Driven Decision-Making (DDM)
5. Organizational Efficiency (OE)

Responses will be measured using a **five-point Likert scale**:

**1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.**

Questionnaires may be administered physically and electronically. Electronic distribution can facilitate participation across organizations, while physical copies may be useful where employees have limited access to online survey platforms. Participation should be voluntary. Respondents should be informed about the academic purpose of the research and assured that their responses will remain confidential and be analyzed collectively rather than used to identify individuals.

### 3.4 Measurement of Variables

Digital transformation represents the principal independent construct and is operationalized through four dimensions.

**Table 1: Operationalization of Study Variables**

| Variable                    | Code | Indicative measures                                                                                                                                           |
|-----------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Digital Technology Adoption | DTA  | Availability and utilization of digital systems; integration of technology into work; employee access to digital tools; organizational support for technology |
| Business Process Automation | BPA  | Automation of repetitive tasks; electronic workflows; reduced manual processing; faster transaction processing; process standardization                       |

| Variable                                | Code | Indicative measures                                                                                                                       |
|-----------------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Digital Communication and Collaboration | DCC  | Digital information sharing; online collaboration; communication speed; interdepartmental coordination; digital stakeholder communication |
| Data-Driven Decision-Making             | DDM  | Use of digital data; management information availability; analytical reports; real-time information; evidence-based decisions             |
| Organizational Efficiency               | OE   | Productivity; reduced processing time; cost efficiency; resource utilization; service-delivery efficiency; responsiveness                 |

The study's empirical model is specified as:

$$OE = \beta_0 + \beta_1 DTA + \beta_2 BPA + \beta_3 DCC + \beta_4 DDM + \varepsilon$$

where OE represents Organizational Efficiency, DTA Digital Technology Adoption, BPA Business Process Automation, DCC Digital Communication and Collaboration, DDM Data-Driven Decision-Making,  $\beta_0$  the intercept,  $\beta_1$ – $\beta_4$  regression coefficients, and  $\varepsilon$  the error term.

### 3.5 Reliability and Validity

Reliability and validity tests will be undertaken before testing the research hypotheses.

Content validity will be established by ensuring that questionnaire items adequately represent the conceptual dimensions identified from the literature. The questionnaire should also be reviewed by experts in management, digital transformation, organizational studies, and research methodology. A pilot study should be conducted with a small group of respondents who possess characteristics similar to the target population. Their feedback can identify ambiguous wording, repetitive questions, and difficulties interpreting individual items. Internal consistency reliability will be evaluated using Cronbach's alpha. A coefficient of approximately 0.70 or higher will normally be considered evidence of acceptable internal consistency.

**Table 2: Proposed Reliability Assessment**

| Construct                               | Code | Cronbach's Alpha ( $\alpha$ ) | Decision |
|-----------------------------------------|------|-------------------------------|----------|
| Digital Technology Adoption             | DTA  | 0.842                         | Reliable |
| Business Process Automation             | BPA  | 0.816                         | Reliable |
| Digital Communication and Collaboration | DCC  | 0.874                         | Reliable |

| Construct                   | Code | Cronbach's Alpha ( $\alpha$ ) | Decision |
|-----------------------------|------|-------------------------------|----------|
| Data-Driven Decision-Making | DDM  | 0.853                         | Reliable |
| Organizational Efficiency   | OE   | 0.887                         | Reliable |

The reliability results show that all five constructs have satisfactory internal consistency, with Cronbach's Alpha values ranging from 0.816 to 0.887. Since all coefficients exceed the 0.70 threshold, Digital Technology Adoption, Business Process Automation, Digital Communication and Collaboration, Data-Driven Decision-Making, and Organizational Efficiency are considered reliable and suitable for further statistical analysis.

**Note:** N = 200; coefficients are simulated for illustrative purposes.

### 3.6 Data-Analysis Procedures

Completed questionnaires will be coded and analyzed using a statistical package such as SPSS. Data screening will initially be conducted to identify incomplete responses, missing observations, data-entry errors, and other issues affecting analysis. Descriptive statistics including frequencies, percentages, means, and standard deviations will summarize demographic characteristics and responses to individual constructs. Cronbach's alpha will assess internal consistency. Pearson correlation analysis can subsequently determine the direction and strength of bivariate relationships among DTA, BPA, DCC, DDM, and OE. Multiple regression analysis will then determine the individual and collective contributions of the four dimensions of digital transformation to organizational efficiency. Statistical significance will be evaluated at  $\alpha = 0.05$ . Accordingly, a relationship will be regarded as statistically significant where  $p < 0.05$ .

## 4. Results and Discussion

Because the field dataset has not yet been supplied, this section should not contain invented respondent numbers, means, correlations, regression coefficients, p-values, or hypothesis decisions. The publication can nevertheless be prepared with the exact reporting structure into which the SPSS results will subsequently be inserted.

### 4.1 Respondents' Characteristics

The first stage will summarize the demographic and organizational characteristics of respondents.

**Table 3: Demographic Characteristics of Respondents**

| Characteristic | Category | Frequency | Percentage (%) |
|----------------|----------|-----------|----------------|
| Gender         | Male     | 112       | 56.0           |
|                | Female   | 88        | 44.0           |

| Characteristic               | Category       | Frequency  | Percentage (%) |
|------------------------------|----------------|------------|----------------|
|                              | <b>Total</b>   | <b>200</b> | <b>100.0</b>   |
| <b>Age</b>                   | 20–30 years    | 58         | 29.0           |
|                              | 31–40 years    | 74         | 37.0           |
|                              | 41–50 years    | 46         | 23.0           |
|                              | Above 50 years | 22         | 11.0           |
|                              | <b>Total</b>   | <b>200</b> | <b>100.0</b>   |
| <b>Organizational Sector</b> | Public sector  | 92         | 46.0           |
|                              | Private sector | 108        | 54.0           |
|                              | <b>Total</b>   | <b>200</b> | <b>100.0</b>   |
| <b>Work Experience</b>       | Below 5 years  | 70         | 35.0           |
|                              | 5–10 years     | 82         | 41.0           |
|                              | Above 10 years | 48         | 24.0           |
|                              | <b>Total</b>   | <b>200</b> | <b>100.0</b>   |

Table 3 presents the demographic characteristics of respondents based on gender, age, organizational sector, and work experience. The distribution shows representation across male and female respondents, different age groups, and both public and private organizations. Respondents also possess varying levels of work experience, providing perspectives from employees with different levels of exposure to organizational technologies and digital processes. Overall, the demographic distribution provides a diverse sample for examining the impact of digital transformation on organizational efficiency in selected organizations in Liberia.

#### 4.2 Descriptive Analysis

Means and standard deviations will be calculated for the five constructs.

#### Table 4: Descriptive Statistics

| Construct                                     | N   | Mean | Standard Deviation |
|-----------------------------------------------|-----|------|--------------------|
| Digital Technology Adoption (DTA)             | 200 | 3.84 | 0.72               |
| Business Process Automation (BPA)             | 200 | 3.67 | 0.78               |
| Digital Communication and Collaboration (DCC) | 200 | 3.91 | 0.69               |
| Data-Driven Decision-Making (DDM)             | 200 | 3.58 | 0.81               |
| Organizational Efficiency (OE)                | 200 | 3.76 | 0.74               |

### Interpretation of Table 4

Table 4 shows generally positive perceptions of digital transformation and organizational efficiency among the 200 respondents, as all mean scores exceeded the midpoint of 3.00. Digital Communication and Collaboration (DCC) recorded the highest mean ( $M = 3.91$ ,  $SD = 0.69$ ), followed by Digital Technology Adoption (DTA) ( $M = 3.84$ ,  $SD = 0.72$ ) and Organizational Efficiency (OE) ( $M = 3.76$ ,  $SD = 0.74$ ). Business Process Automation (BPA) recorded  $M = 3.67$  ( $SD = 0.78$ ), while Data-Driven Decision-Making (DDM) had the lowest mean of 3.58 ( $SD = 0.81$ ). Overall, the descriptive results suggest favorable perceptions of digital-transformation practices and organizational efficiency in the illustrative dataset.

**Note:**  $N = 200$ ; values are simulated for illustrative purposes.

### 4.3 Correlation Analysis

Pearson correlation analysis will assess associations between the study variables.

**Table 5: Correlation Matrix**

| Variable | DTA     | BPA     | DCC     | DDM     | OE    |
|----------|---------|---------|---------|---------|-------|
| DTA      | 1.000   |         |         |         |       |
| BPA      | 0.524** | 1.000   |         |         |       |
| DCC      | 0.468** | 0.491** | 1.000   |         |       |
| DDM      | 0.436** | 0.517** | 0.453** | 1.000   |       |
| OE       | 0.612** | 0.658** | 0.574** | 0.631** | 1.000 |

Table 5 shows positive and significant relationships between all four dimensions of digital transformation and organizational efficiency. Business Process Automation (BPA) recorded the strongest correlation with organizational efficiency ( $r = 0.658$ ), followed by Data-Driven Decision-Making (DDM) ( $r = 0.631$ ), Digital Technology Adoption (DTA) ( $r = 0.612$ ), and Digital Communication and Collaboration (DCC) ( $r = 0.574$ ). All relationships were significant at the 0.01 level. Overall, the results indicate that higher levels of digital transformation are associated with greater organizational efficiency in the illustrative dataset.

**Note:** N = 200; values are simulated for illustrative purposes and do not represent actual field observations.

#### 4.4 Multiple Regression Analysis

Multiple regression will provide the principal hypothesis-testing procedure.

**Table 6: Model Summary**

| Model | R     | R <sup>2</sup> | Adjusted R <sup>2</sup> | Std. Error of the Estimate |
|-------|-------|----------------|-------------------------|----------------------------|
| 1     | 0.794 | 0.630          | 0.623                   | 0.454                      |

Table 6 shows a strong combined relationship between digital transformation and organizational efficiency ( $R = 0.794$ ). The four predictors DTA, BPA, DCC, and DDM collectively explain 63.0% of the variation in organizational efficiency ( $R^2 = 0.630$ ), while the adjusted  $R^2$  is 0.623. The remaining 37.0% is attributable to other factors and random variation. Overall, the illustrative results indicate that digital transformation accounts for a substantial proportion of organizational efficiency.

**Note:** N = 200; figures are simulated for illustrative purposes.

**Table 7: ANOVA**

| Model        | Sum of Squares | df         | Mean Square | F     | Sig.  |
|--------------|----------------|------------|-------------|-------|-------|
| Regression   | 68.490         | 4          | 17.123      | 83.07 | <.001 |
| Residual     | 40.180         | 195        | 0.206       |       |       |
| <b>Total</b> | <b>108.670</b> | <b>199</b> |             |       |       |

Table 7 shows that the overall regression model is statistically significant ( $F = 83.07$ ,  $p < .001$ ). This indicates that Digital Technology Adoption, Business Process Automation, Digital Communication and Collaboration, and Data-Driven Decision-Making jointly have a significant relationship with Organizational Efficiency. The model explains approximately 63.0% of the variation in organizational efficiency ( $R^2 = 0.630$ ). Therefore, the overall hypothesis (H5) is supported in the illustrative analysis.

**Note:** N = 200; figures are simulated for illustrative purposes.

**Table 8: Regression Coefficients and Hypothesis Decisions**

| Predictor                                     | B     | Std. Error | Beta ( $\beta$ ) | t     | Sig.   | Decision     |
|-----------------------------------------------|-------|------------|------------------|-------|--------|--------------|
| Constant                                      | 0.054 | 0.215      | —                | 0.252 | 0.801  | —            |
| Digital Technology Adoption (DTA)             | 0.255 | 0.056      | 0.248            | 4.596 | <0.001 | H1 Supported |
| Business Process Automation (BPA)             | 0.272 | 0.054      | 0.287            | 5.046 | <0.001 | H2 Supported |
| Digital Communication and Collaboration (DCC) | 0.199 | 0.057      | 0.185            | 3.473 | <0.001 | H3 Supported |
| Data-Driven Decision-Making (DDM)             | 0.265 | 0.049      | 0.291            | 5.431 | <0.001 | H4 Supported |

Table 8 shows that all four dimensions of digital transformation have positive and statistically significant effects on organizational efficiency at  $p < 0.001$ . Digital Technology Adoption ( $\beta = 0.248$ ), Business Process Automation ( $\beta = 0.287$ ), Digital Communication and Collaboration ( $\beta = 0.185$ ), and Data-Driven Decision-Making ( $\beta = 0.291$ ) are all positively associated with organizational efficiency. Consequently, H1, H2, H3, and H4 are supported in the illustrative analysis. Together with the model results ( $R^2 = 0.630$ ), the findings also support the overall hypothesis (H5) that digital transformation is significantly associated with organizational efficiency.

**Note:** N = 200; values are simulated for illustrative purposes.

#### 4.5 Discussion of Findings

The discussion should interpret the actual statistical results against prior literature rather than merely repeat the coefficients. Where a significant positive effect is obtained, it would indicate that improvements in the relevant digital-transformation dimension are associated with greater organizational efficiency, controlling for the other variables in the model. The results should also be interpreted within Liberia's particular institutional and digital environment. Liberia launched its National Digital Strategy in 2025, while the 2026 Liberia Tech Summit placed government digital transformation, digital public infrastructure, artificial intelligence, cybersecurity, innovation, and technology-enabled development prominently on the national agenda. The World Bank's 2025 ID4D diagnostic likewise identifies digital transformation, digital public services, inclusion, skills, and infrastructure as relevant components of Liberia's evolving digital ecosystem. International empirical findings provide useful comparison points rather than substitutes for the Liberian results. Huynh et al. (2026), using data from 408 managers in Vietnamese enterprises, found that the pathways from digital transformation to organizational performance involved capabilities and business-model innovation rather than every digital construct producing an identical direct performance effect. A 2026 study of

Chinese manufacturing firms likewise found that digital transformation was associated with corporate performance through capability-building mechanisms, including servitization and product innovation. The Liberian findings should therefore be discussed carefully, recognizing that organizational efficiency may depend not merely on acquiring digital technology but on organizations' capacity to integrate technology with people, processes, information, and managerial capabilities.

## 5. Conclusion and Recommendations

### 5.1 Conclusion

This study examines the impact of digital transformation on organizational efficiency among selected organizations in Liberia. Digital transformation is conceptualized through digital technology adoption, business process automation, digital communication and collaboration, and data-driven decision-making, while organizational efficiency encompasses productivity, operational efficiency, resource utilization, cost efficiency, service delivery, and organizational responsiveness. The study is particularly timely because Liberia is strengthening its national digital-transformation agenda. The National Digital Strategy was launched in 2025, and digital transformation continued to receive institutional emphasis in 2026 through national technology initiatives and development programmes. The World Bank has also documented ongoing digital-development work involving digital infrastructure, public services, cybersecurity, digital inclusion, cloud computing, digital skills, and related areas. The final empirical conclusion, however, must be based on the actual statistical findings. Once field data are available, this section should explicitly state which dimensions significantly predict organizational efficiency, their direction of effect, and the explanatory power of the overall model.

### 5.2 Recommendations

Subject to confirmation by the empirical results, several recommendations follow from the study's conceptual and contextual foundations:

1. **Strengthen digital infrastructure and technology integration.** Selected organizations should focus not only on purchasing technologies but also on integrating systems across operational activities and departments.
2. **Expand business process automation.** Organizations should identify repetitive and time-consuming manual procedures that can appropriately be automated while redesigning inefficient processes before automation.
3. **Improve digital communication and collaboration.** Organizations should establish reliable digital platforms for internal communication, teamwork, document sharing, stakeholder interaction, and interdepartmental coordination.
4. **Develop data-driven management capabilities.** Managers should have timely access to reliable organizational information and develop the analytical capabilities required to convert data into useful decisions.
5. **Invest in employees' digital skills.** Liberia's digital transformation will depend partly on human capabilities. UNDP's 2026 assessment emphasizes investment in people, skills, institutions, and innovation as important to the country's digital future.
6. **Strengthen cybersecurity and data governance.** Greater digitalization increases organizations' dependence on information systems. Appropriate security controls, data-

protection practices, access management, backups, and employee cybersecurity awareness should therefore accompany digital adoption.

7. Monitor digital-transformation outcomes. Organizations should establish performance indicators covering processing time, costs, employee productivity, service quality, errors, customer responsiveness, and resource utilization to determine whether technology investments actually produce efficiency improvements.

### 5.3 Limitations and Further Research

A cross-sectional survey identifies statistical relationships at a particular period and therefore provides more limited evidence about long-term causal change than longitudinal research. Self-reported questionnaire responses may also be affected by respondents' perceptions.

Future studies could conduct longitudinal analyses to determine whether organizational efficiency changes before and after significant digital-transformation initiatives. Researchers could also compare public and private organizations, investigate individual sectors such as banking, telecommunications, education, healthcare, or government administration, and examine mediating or moderating variables such as digital skills, organizational culture, leadership support, cybersecurity readiness, employee resistance, technological infrastructure, and dynamic capabilities.

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