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## Identifying the Components of a Leadership Behavior Model with an Information and Communication Technology (ICT) Approach in Governmental Organizations

### ABSTRACT

The present study aimed to identify the components of a leadership behavior model with an information and communication technology (ICT) approach in governmental organizations. This study was conducted using a qualitative exploratory approach with an inductive strategy. The statistical population in the qualitative phase consisted of academic experts and experienced executive specialists in governmental organizations, particularly within the Organization for Registration of Deeds and Properties. Seventeen experts were selected through purposive sampling based on their scientific and practical expertise in management, information technology, public administration, and organizational leadership. Data were collected through deep semi-structured interviews conducted over a two-month period, with each interview lasting between 60 and 80 minutes. Data collection continued until theoretical saturation was achieved. The interviews were transcribed and analyzed using thematic analysis based on the six-step framework of Braun and Clarke, including familiarization with the data, generation of initial codes, identification of themes, review of themes, definition of themes, and final reporting. To enhance trustworthiness, continuous comparison, analytical memo writing, and repeated review of codes and themes were employed throughout the analysis process. The findings revealed a comprehensive and multidimensional framework for ICT-oriented leadership behavior in governmental organizations. A total of 20 main themes and numerous sub-themes were extracted from the interview data. The identified dimensions included transformation of leadership style in the digital environment, ICT-based employee empowerment, integration and development of communication infrastructures, enhancement of digital leadership competencies, transformation of administrative processes through technology, ICT-based managerial transparency and accountability, improvement of organizational communication and participatory leadership, digital change management, enhancement of cybersecurity and data protection, digital agility in managerial decision-making, development of smart citizen services, optimization of human resource management through intelligent systems, enhancement of organizational monitoring, institutionalization of a data-driven culture, digital knowledge management, ethical-oriented leadership, promotion of administrative justice through electronic leadership, digital risk management and technological resilience, organizational decision-making management, and data-driven leadership in digital privacy and security. The findings indicate that ICT-oriented leadership in governmental organizations is not limited to technological adoption, but rather represents a comprehensive transformation involving leadership behaviors, organizational culture, communication systems, employee empowerment, data-driven governance, digital ethics, and strategic adaptability.

**Keywords:** Digital leadership, Information and communication technology, Governmental organizations, Organizational transformation, Digital governance, Thematic analysis, Leadership behavior model, Public sector innovation

## Introduction

The rapid expansion of information and communication technology (ICT) has fundamentally transformed the structure, functions, and governance mechanisms of organizations across the world. In recent years, governmental organizations have increasingly encountered pressures to adapt to digital transformation processes in order to improve efficiency, transparency, responsiveness, service quality, and citizen satisfaction. Digital transformation is no longer limited to the adoption of technological tools or automation of administrative operations; rather, it represents a profound organizational transformation that reshapes leadership approaches, organizational culture, decision-making processes, communication systems, and employee competencies [1, 2]. In this context, leadership has emerged as one of the most influential determinants of successful digital transformation because leaders are responsible for directing organizational change, managing technological adaptation, motivating employees, and aligning organizational goals with digital capabilities [3, 4]. Traditional leadership models, which were largely designed for stable and hierarchical organizational structures, are increasingly inadequate for responding to the complexities, uncertainty, and dynamic nature of digitally driven environments. Consequently, scholars and practitioners have emphasized the necessity of developing new leadership models that are compatible with digital ecosystems, technological innovation, and knowledge-based organizational environments [5, 6].

Digital leadership has therefore become a central topic in organizational and management studies. Digital leadership refers to leadership behaviors, capabilities, and strategic orientations that facilitate organizational adaptation to technological transformation and enable organizations to leverage digital technologies effectively for innovation, communication, performance enhancement, and sustainability [7, 8]. Unlike conventional leadership approaches, digital leadership combines technological awareness with strategic thinking, organizational agility, collaborative communication, and data-driven decision-making. Digital leaders are expected not only to understand technological developments, but also to create digital cultures, empower employees, encourage innovation, and foster organizational learning in digitally oriented environments [2, 9]. The increasing dependence of organizations on intelligent systems, electronic communication infrastructures, data analytics, cloud platforms, and virtual collaboration has intensified the importance of leadership styles capable of integrating technological capabilities with human resource management and organizational strategy [10, 11]. In governmental organizations particularly, where bureaucratic procedures, administrative complexity, and resistance to change are often more prevalent, digital leadership plays a critical role in facilitating transformation and reducing operational inefficiencies [12, 13].

One of the most important consequences of ICT-oriented leadership is the enhancement of organizational agility and innovation capability. Organizations operating in digital environments must continuously respond to technological changes, citizen expectations, cybersecurity challenges, and competitive service demands. Under such conditions, leadership styles based on flexibility, participation, and innovation become essential for organizational survival and effectiveness [9, 14]. Research has demonstrated that digital leadership contributes significantly to organizational innovation, digital business model transformation, and adaptive strategic behavior [10, 12]. Similarly, digital transformational leadership enhances knowledge sharing, organizational learning, and innovation capabilities by encouraging collaboration and technological engagement among employees [13, 15]. In addition, digital leadership has been linked to employee engagement and sustainable competitive advantage because leaders who support technological learning and digital empowerment create environments where employees are more motivated to participate in organizational transformation initiatives [5, 16]. Such

findings indicate that leadership in the digital age extends beyond supervision and control toward facilitating knowledge exchange, creativity, technological experimentation, and strategic adaptability.

The relationship between digital leadership and organizational culture has also received increasing scholarly attention. Successful digital transformation requires not only technological infrastructure but also a supportive organizational culture that encourages innovation, continuous learning, collaboration, and openness to change [11, 17]. Leaders are instrumental in shaping such cultures because they influence employees' attitudes toward technology adoption, organizational trust, and behavioral adaptation. Research suggests that digital leadership capabilities strengthen organizational innovation ecosystems and improve institutional competitiveness by establishing technology-oriented cultures and participatory communication environments [18, 19]. Likewise, leadership approaches emphasizing digital citizenship, ethical communication, and knowledge sharing enhance organizational resilience and collective problem-solving capacities in digitally transformed institutions [19, 20]. In public organizations, where employees may experience uncertainty and resistance toward digital transformation, leadership behaviors that promote inclusion, participation, and transparency become especially important for achieving sustainable organizational change [6, 21].

Another critical dimension of ICT-oriented leadership involves employee empowerment and competency development. Digital transformation often requires employees to acquire new technical competencies, adapt to digital workflows, and interact with intelligent systems and data-driven processes. Consequently, leaders must create supportive conditions for continuous learning, digital literacy enhancement, and technological capability development [4, 22]. Studies have shown that transformational and digital leadership styles positively influence employee competence, organizational commitment, and performance through training support, innovation encouragement, and technological empowerment [17, 22]. Furthermore, organizations undergoing digital transformation require leaders who can manage resistance to change and foster positive attitudes toward technological adaptation [6, 21]. Employees are more likely to accept digital systems and participate in organizational transformation when leaders communicate clear digital visions, encourage collaborative learning, and provide psychological and technological support during transitional periods [5, 11]. Therefore, leadership behavior in ICT-oriented organizations must encompass not only technological expertise but also interpersonal, motivational, and developmental capabilities.

In addition to organizational and human resource implications, ICT-oriented leadership has substantial implications for governance quality, transparency, accountability, and service delivery in governmental institutions. Public organizations increasingly rely on digital systems to provide online services, manage citizen data, facilitate communication, and improve administrative efficiency. As a result, leadership models must incorporate dimensions related to cybersecurity, data governance, ethical technology use, and electronic accountability [8, 19]. Digital leadership contributes to transparent decision-making, reduction of administrative corruption, improved monitoring systems, and data-driven policy implementation [1, 14]. Moreover, ICT-based leadership enables governments to enhance citizen-oriented services through online platforms, smart administrative systems, and integrated communication infrastructures [2, 15]. Scholars have also emphasized the importance of leadership in managing digital ethics and protecting organizational and citizen information against cyber threats and privacy violations [19, 23]. In this regard, digital leadership must balance technological advancement with ethical responsibility, institutional trust, and secure governance practices.

Despite the growing body of literature on digital transformation and digital leadership, significant conceptual and contextual gaps remain, particularly within governmental organizations in developing administrative systems. Much of the existing literature has focused on private sector organizations, educational institutions, manufacturing industries, or commercial digital ecosystems, while fewer studies have comprehensively explored ICT-oriented leadership behavior within public organizations characterized by bureaucratic structures and legal-administrative constraints [3, 12]. Furthermore, previous research has often examined isolated variables such as innovation capability, employee engagement, organizational culture, or digital transformation outcomes without developing an integrated behavioral model of leadership grounded in ICT contexts [7, 10]. The multidimensional nature of digital leadership suggests the necessity of identifying comprehensive behavioral components that simultaneously address technological adaptation, organizational communication, employee empowerment, ethical governance, strategic transformation, data-driven management, and digital resilience [8, 9]. In governmental organizations such as the Organization for Registration of Deeds and Properties, where digitalization processes directly influence public service quality, legal documentation, transparency, and citizen trust, the absence of a contextualized ICT-oriented leadership model creates practical and theoretical challenges for organizational development.

Accordingly, the present study seeks to identify the components of a leadership behavior model with an information and communication technology approach in governmental organizations.

## Methodology

The present study was conducted using a qualitative exploratory approach with an inductive research strategy in order to identify and conceptualize the components of leadership behavior based on information and communication technology in governmental organizations. Given the limited theoretical and empirical clarity surrounding ICT-oriented leadership behavior in public organizations, the study sought to develop a context-based conceptual understanding through the experiences and perceptions of experts and practitioners. The research was applied in terms of purpose and qualitative in nature, emphasizing the discovery and interpretation of underlying concepts, behavioral dimensions, and interactional patterns associated with leadership behavior in technology-oriented governmental environments. The qualitative phase constituted the core and primary component of the study, and all stages of the research process were designed according to the principles of qualitative inquiry and thematic analysis.

The field of study focused on governmental organizations, with particular emphasis on the Organization for Registration of Deeds and Properties as a representative public institution experiencing extensive interaction with information and communication technologies in administrative and managerial processes. Participants in the study were selected through purposive sampling based on their scientific expertise, executive experience, and familiarity with leadership practices and ICT implementation within governmental systems. The participants consisted of 14 experts, including university faculty members specializing in management, organizational behavior, information technology, and public administration, as well as experienced executive experts and senior practitioners with substantial professional experience in governmental organizations. Sampling continued until theoretical saturation was achieved, meaning that subsequent interviews no longer generated new conceptual insights or thematic categories relevant to the phenomenon under investigation.

Data collection and analysis were conducted simultaneously in accordance with qualitative research principles. Deep semi-structured interviews were used as the primary method of data collection because this technique allows the researcher to

explore participants' experiences, interpretations, and perceptions in a flexible and interactive manner. Prior to the interviews, an interview guide was developed through extensive review of the literature and consultation with academic specialists. A pilot interview was also conducted to refine the interview structure and ensure the clarity and relevance of the interview themes. The interviews were conducted over a two-month period, and each session lasted approximately 60 to 80 minutes. All interviews were conducted in an interactive and open-ended format, enabling participants to elaborate on leadership behaviors, technological challenges, organizational culture, communication patterns, digital competencies, and managerial practices associated with ICT-oriented leadership in governmental settings.

The primary tool for data collection in this qualitative study was the semi-structured in-depth interview. This method was selected because of its capacity to generate rich, detailed, and context-sensitive data regarding complex organizational and leadership phenomena. The semi-structured format provided a balance between methodological consistency and conversational flexibility, allowing the researcher to guide the discussion through predetermined thematic areas while simultaneously exploring emerging concepts and unanticipated insights raised by participants during the interview process.

The interview protocol was designed based on theoretical foundations related to leadership behavior, information and communication technology, digital transformation in public organizations, and organizational communication. The interview questions focused on identifying the behavioral dimensions of leaders in technology-oriented environments, the influence of ICT on leadership practices, organizational requirements for digital leadership, communication patterns in technologically mediated settings, and the challenges and opportunities associated with implementing ICT-based leadership approaches in governmental organizations. Questions were formulated in an open-ended manner to encourage participants to provide descriptive explanations, practical examples, and reflective interpretations of their experiences.

During the interviews, all conversations were audio-recorded with the consent of participants to ensure the accuracy and completeness of the collected data. Following each interview, the recorded materials were transcribed verbatim and converted into textual documents for analysis. The transcription process enabled repeated review and immersion in the data, which is considered an essential stage in qualitative inquiry. In addition to audio recordings, the researcher maintained analytical notes and reflective memos throughout the research process in order to capture initial interpretations, conceptual observations, and emerging thematic relationships. These notes contributed to enhancing the depth of analysis and maintaining methodological rigor during the coding and interpretation stages.

The trustworthiness of the qualitative findings was strengthened through prolonged engagement with the data, continuous comparison of codes and themes, participant-oriented interpretation, and repeated review of extracted concepts. The researcher also attempted to minimize the influence of prior assumptions and theoretical preconceptions by approaching the interview data with analytical openness and allowing themes to emerge inductively from participants' narratives and experiences.

Data analysis in the present study was conducted using thematic analysis based on the six-phase framework proposed by Virginia Braun and Victoria Clarke. Thematic analysis was selected because it provides a systematic and flexible method for identifying, analyzing, and interpreting meaningful patterns within qualitative data. This approach enabled the researcher to transform extensive and dispersed interview data into coherent conceptual themes representing the components of ICT-oriented leadership behavior in governmental organizations.

The first stage of analysis involved familiarization with the data. After transcription, the interview texts were read and reviewed multiple times in order to achieve deep immersion in the participants' statements and experiences. During this stage, preliminary observations and interpretive notes were documented. The second stage involved generating initial codes through systematic coding of meaningful statements, concepts, and recurring expressions within the interview texts. Segments of data containing relevant meanings were highlighted and assigned conceptual labels representing the essence of participants' viewpoints.

In the third stage, related codes were grouped together to identify preliminary themes and conceptual categories. The researcher examined relationships among the extracted codes and organized them into broader thematic clusters reflecting shared conceptual meanings. In the fourth stage, the identified themes were reviewed and refined in order to ensure internal consistency and conceptual distinction among themes. Themes that lacked sufficient conceptual support were revised, merged, or eliminated, while broader themes were reorganized into more coherent conceptual structures.

The fifth stage focused on defining and naming the themes. At this stage, the researcher clarified the conceptual boundaries and interpretive meanings of each theme and selected appropriate titles capable of accurately reflecting the underlying dimensions of the extracted concepts. The final stage involved producing the analytical narrative and integrating the themes into a coherent conceptual explanation of leadership behavior with an information and communication technology orientation in governmental organizations.

The coding and thematic analysis process was conducted concurrently with data collection, allowing emerging findings to guide subsequent interviews and deepen conceptual exploration. Through continuous comparison and iterative analysis, the study ultimately identified the central dimensions, behavioral components, and conceptual relationships constituting the proposed model of ICT-oriented leadership behavior in governmental organizations.

## **Findings and Results**

The qualitative sample consisted of 17 experts, including 12 men and 5 women, with ages ranging from 32 to 65 years. In terms of educational level, 10 participants held doctoral degrees and 7 held master's degrees. The participants represented diverse but relevant areas of expertise, including law, public administration, organizational management, human resource management, information technology management, advanced information systems, transformation management, and science and technology policy. Their professional and academic experience ranged from 7 to 35 years, indicating that the sample included both experienced executive specialists from the Registration of Deeds and Properties sector and academic experts familiar with leadership, organizational transformation, ICT infrastructure, and smart business systems. Overall, the demographic composition of the participants shows that the qualitative data were collected from a knowledgeable and experienced expert group capable of providing rich insights into ICT-oriented leadership behavior in governmental organizations.

**Table 1***Main and Sub-Themes Extracted from Expert Interviews*

Main Theme	Sub-Themes
Transformation of Leadership Style in the Digital Environment	Development of future-oriented organizational goals; strengthening technology experience; expanding the capacity to implement digital projects; stimulating digital organizational culture; developing a competitive technological outlook; reforming traditional managerial behavior; practical modeling of technology use; stabilizing managers' digital literacy; reducing managers' technological fear
ICT-Based Employee Empowerment	Enhancing employees' digital skills; providing hardware and software support; involving employees in technology development; creating technological trust; designing motivational and incentive models; promoting technological learning; strengthening employees' digital independence; providing psychological support for employees
Integration and Development of Communication Infrastructure	Developing and strengthening organizational communication infrastructure; securing communications; integrating inter-organizational communication; transforming user-centered communication
Enhancement of Digital Leadership Competencies	Developing managers' digital literacy; developing ICT-based leadership skills; promoting a digital learning culture; assessing digital competence
Transformation of Administrative Processes through Technology	Mechanizing registration processes; accelerating administrative operations; protecting and maintaining documents through technology; organizing online services
ICT-Based Managerial Transparency and Accountability	Enhancing managerial information transparency; strengthening digital managerial accountability; developing electronic public monitoring; promoting digital administrative integrity
Improvement of Organizational Communication and Participatory Leadership	Developing digital intra-organizational communication; strengthening digital participatory leadership; improving information flow; creating coherence in headquarters-provincial communications
Digital Change and Transition Management	Creating a culture for digital change; managing resistance to technological change; strategic planning for transformation; aligning transformation with policies and legal requirements
Enhancement of Data Security and Cyber Protection	Managing digital access control; protecting information through encryption; evaluating and auditing cybersecurity; promoting cybersecurity culture
Digital Agility in Managerial Decision-Making	Real-time data-based decision-making; predictive decision-making; accelerating the decision-making cycle; enabling electronic participation in decision-making
Development of Smart and Electronic Citizen Services	Expanding online registration services; optimizing user experience; facilitating electronic financial processes; creating innovation and convenience in online access tools
Optimization of Human Resource Management through Smart Systems	Digitalizing human resource information; managing human resource competencies; allocating the workforce intelligently; strengthening digital justice in human resource management
Enhancement of Organizational Performance Monitoring	Data-driven performance monitoring; using intelligent monitoring tools; strengthening digital disciplinary supervision; integrating headquarters-level performance monitoring
Institutionalization of a Data-Driven Culture	Data-based decision-making; applying data analysis in management; documenting managerial knowledge; developing a data-technology culture
Development of Digital Knowledge Management	Collecting and storing organizational knowledge; transferring organizational knowledge; utilizing knowledge for improvement; enhancing employees' competencies in knowledge use
Ethical-Oriented Leadership in the ICT Context	Protecting digital privacy; maintaining information integrity and accuracy; developing an ethical organizational culture; ensuring justice and transparency in services
Development of Administrative Justice and Reduction of Discrimination through Electronic Leadership	Standardizing services; establishing fair monitoring and feedback; developing a culture of justice, transparency, and accountability
Digital Risk Management and IT Resilience	Identifying and analyzing digital risks; designing technology-based resilience programs; developing resilient leadership; continuous monitoring and control
Organizational Decision-Making Management	Using digital tools for decision-making; strengthening transparency in decision-making processes
Data-Driven Leadership in Enhancing Security and Digital Privacy	Strengthening data security and privacy; improving data resilience

The findings presented in Table 1 indicate that expert interviews led to the extraction of a comprehensive thematic structure for the leadership behavior model with an ICT-oriented approach in governmental organizations. The analysis revealed 20 main themes that collectively describe the behavioral, technological, managerial, ethical, infrastructural, and service-oriented dimensions of digital leadership. These themes show that ICT-oriented leadership is not limited to the use of digital tools, but includes a broader transformation in leadership style, decision-making, employee empowerment, organizational communication, administrative processes, transparency, risk management, and citizen-oriented service delivery.

The most central theme was the transformation of leadership style in the digital environment, which included future-oriented organizational goals, digital culture-building, practical modeling of technology use by managers, and reduction of technological fear among leaders. This finding suggests that the success of ICT-oriented leadership depends heavily on the

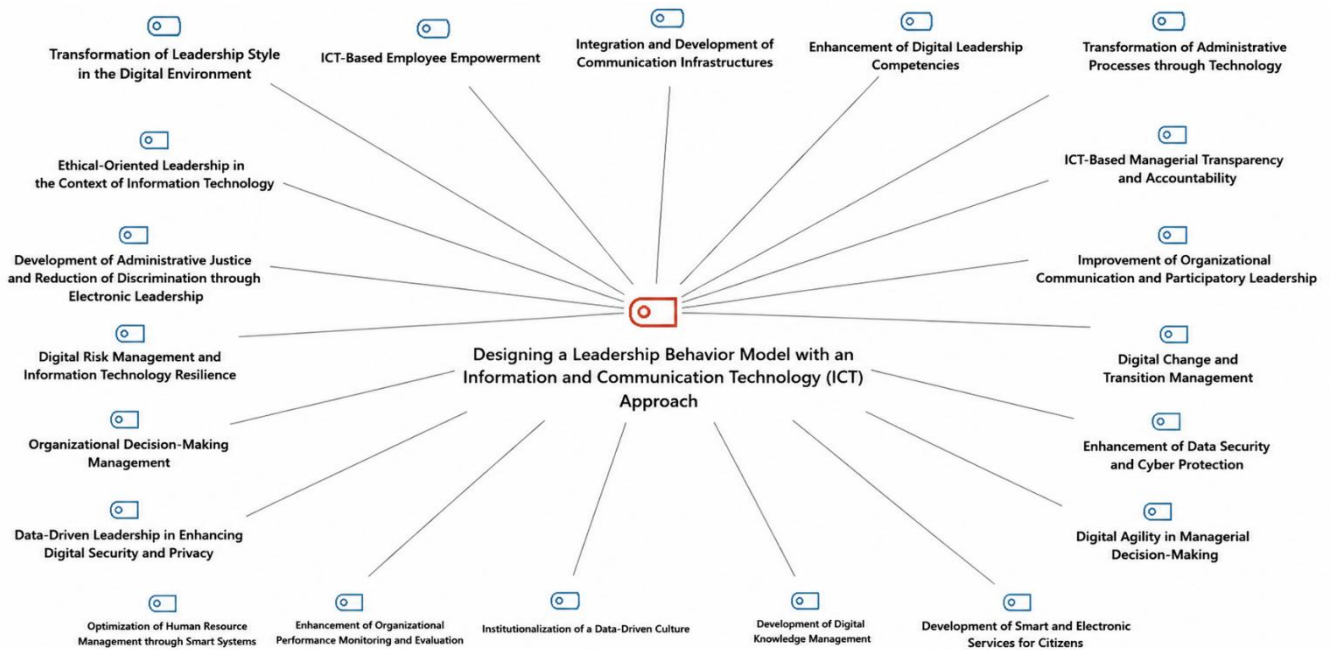
visible behavioral commitment of managers to digital transformation. In addition, ICT-based employee empowerment emerged as a major component, emphasizing that digital transformation in governmental organizations requires trained, confident, supported, and motivated employees who can participate actively in developing and improving technological systems.

The table also shows that infrastructural, procedural, and governance-related themes formed an important part of the proposed model. Integration of communication infrastructure, cybersecurity, digital risk management, smart citizen services, and electronic administrative processes were repeatedly emphasized by experts. These findings indicate that leadership behavior in ICT-oriented governmental organizations must be connected to operational systems, secure data exchange, process automation, online service delivery, and resilient digital infrastructure. Therefore, the leadership model identified in this study combines behavioral leadership dimensions with technological and administrative capabilities.

Finally, the extracted themes demonstrate that ICT-oriented leadership has a strong ethical and accountability-based dimension. Themes such as managerial transparency, digital accountability, administrative justice, reduction of discrimination, privacy protection, information integrity, and ethical use of technology show that experts considered digital leadership not only as a technical or managerial issue, but also as a governance and public trust issue. Overall, the qualitative findings provide a multidimensional framework for understanding how leadership behavior can support digital transformation, service improvement, employee empowerment, and ethical governance in public organizations.

**Figure 1**

*Final Model of the Study*



**Discussion and Conclusion**

The purpose of the present study was to identify the components of a leadership behavior model with an information and communication technology (ICT) approach in governmental organizations. The qualitative findings led to the extraction of a comprehensive framework consisting of multiple interconnected dimensions, including transformation of leadership style in

the digital environment, ICT-based employee empowerment, development of communication infrastructures, enhancement of digital leadership competencies, transformation of administrative processes, managerial transparency and accountability, participatory digital communication, digital change management, cybersecurity and data protection, digital decision-making agility, smart citizen services, data-driven organizational culture, digital knowledge management, ethical leadership, digital justice, digital risk management, and smart organizational monitoring systems. The diversity and comprehensiveness of the extracted themes indicate that ICT-oriented leadership is a multidimensional organizational phenomenon that simultaneously encompasses technological, managerial, cultural, ethical, communication, and strategic dimensions. These findings confirm that digital transformation in governmental organizations cannot be achieved solely through technological investment; rather, it requires the emergence of leadership behaviors capable of integrating human resources, organizational culture, digital infrastructure, and strategic governance into a coherent transformation process [2, 7].

One of the most significant findings of this study was the identification of “transformation of leadership style in the digital environment” as a central dimension of ICT-oriented leadership. The findings demonstrated that leaders in governmental organizations must move beyond traditional bureaucratic and paper-based management styles toward flexible, technology-oriented, and innovation-driven behaviors. Experts emphasized behaviors such as promoting digital culture, reducing reliance on manual processes, encouraging digital communication, and modeling technology use in everyday managerial practices. This finding aligns with the arguments presented by researchers who emphasize that digital leadership requires leaders to actively support innovation, organizational agility, and technological adaptation [3, 9]. Similarly, studies on transformational leadership in the digital era have shown that effective digital leaders create future-oriented visions and motivate employees to engage with technological systems and innovation initiatives [4, 5]. The findings of the present study also support the perspective that leadership behavior in digital organizations is increasingly associated with adaptability, digital awareness, strategic technological orientation, and openness to organizational transformation [1, 10].

Another important finding concerned ICT-based employee empowerment and the enhancement of employees’ digital competencies. Participants emphasized the importance of digital training, technological learning, psychological support, hardware and software facilitation, and employee participation in technology development processes. This suggests that successful digital transformation depends substantially on employees’ technological readiness and their willingness to engage with digital systems. These findings are consistent with studies demonstrating that digital leadership positively affects employee engagement, organizational learning, and workforce performance by fostering digital capability development and technological empowerment [17, 22]. Moreover, previous research has shown that resistance to technological change decreases when leaders provide employees with opportunities for learning, participation, and digital skill enhancement [6, 21]. The present findings extend this literature by showing that governmental organizations require not only technological infrastructure but also supportive leadership behaviors that reduce technological fear and create confidence in digital transformation processes.

The study also identified the development and integration of communication infrastructures as a key component of ICT-oriented leadership behavior. Experts highlighted secure digital communication, inter-organizational integration, online coordination systems, and mobile-based communication services as essential requirements for effective leadership in governmental organizations. This finding is aligned with prior studies emphasizing the importance of digital platforms, communication systems, and collaborative technological environments for organizational innovation and transformation [10,

13]. Furthermore, the findings support the argument that digital leadership facilitates organizational connectivity and coordination by enabling rapid information exchange, integrated workflows, and collaborative communication networks [2, 15]. In public organizations particularly, where communication delays and bureaucratic fragmentation often reduce efficiency, ICT-oriented leadership appears to play a critical role in improving coordination and service responsiveness.

The findings related to digital leadership competencies and data-driven decision-making also deserve particular attention. Experts emphasized competencies such as data analysis, digital literacy, innovation-oriented leadership, virtual team management, and evidence-based decision-making. Additionally, themes related to predictive decision-making, real-time monitoring, and digital decision agility indicated that leaders increasingly rely on technological systems and data analytics for organizational governance. These findings correspond with prior research suggesting that digital leaders must possess analytical capabilities and technological understanding to manage organizational transformation effectively [4, 8]. Likewise, studies have demonstrated that digital transformation enhances innovation and strategic responsiveness when leaders use digital platforms and data systems to improve organizational agility and operational efficiency [9, 10]. The present study expands on these perspectives by demonstrating that data-driven leadership in governmental organizations also contributes to transparency, accountability, monitoring, and reduction of subjective decision-making processes.

Another major finding of the study involved the role of ICT-oriented leadership in promoting transparency, accountability, and administrative justice. Experts repeatedly referred to electronic monitoring systems, online reporting mechanisms, digital documentation, public access to information, and reduction of discriminatory administrative procedures. This indicates that ICT-based leadership can contribute significantly to good governance and public trust by increasing transparency and reducing opportunities for corruption and non-standardized administrative behavior. These findings support previous research emphasizing that digital transformation improves organizational accountability, service transparency, and institutional legitimacy through data-driven governance systems and technological monitoring tools [14, 19]. Additionally, the findings align with studies showing that digital leadership contributes to ethical governance and citizen-centered administration by integrating fairness, accessibility, and transparency into digital service delivery systems [18, 20]. The emphasis on justice-oriented leadership in the present study is particularly important because governmental organizations are expected not only to improve efficiency but also to ensure fairness and equality in public service provision.

The findings further revealed that cybersecurity, digital privacy, and technological resilience constitute central dimensions of ICT-oriented leadership behavior. Participants highlighted issues such as encrypted communication, access control, cybersecurity audits, data privacy, crisis management, and resilience planning. These findings indicate that leadership in digital governmental organizations must address security risks and technological vulnerabilities alongside innovation and transformation. This result is consistent with previous literature emphasizing that digital leadership requires balancing technological advancement with risk management and data protection responsibilities [19, 23]. Similarly, studies have demonstrated that digital leadership capabilities strengthen organizational resilience by improving preparedness for technological disruptions and cyber threats [7, 9]. The present study contributes to this literature by illustrating how governmental organizations integrate cybersecurity considerations into leadership behavior, decision-making processes, and organizational communication systems.

Another important aspect of the findings concerned digital knowledge management and the institutionalization of a data-driven culture. Experts emphasized organizational knowledge storage, digital documentation, knowledge sharing, managerial

learning systems, and the use of organizational data for continuous improvement. These findings support the growing recognition that knowledge management and digital leadership are deeply interconnected in modern organizations [15, 17]. Prior studies have shown that digital transformation is more effective when leaders encourage collaborative learning, information sharing, and evidence-based organizational cultures [11, 16]. The present findings indicate that governmental organizations increasingly rely on digital knowledge systems not only to improve performance but also to preserve institutional memory, facilitate managerial continuity, and support strategic decision-making.

The study additionally demonstrated that ICT-oriented leadership strongly influences citizen-oriented service delivery and administrative process transformation. Themes such as smart electronic services, online registration systems, electronic payment systems, digital tracking services, and reduced need for physical presence reflected the importance of technology-based public service modernization. These findings correspond with prior research emphasizing that digital transformation enhances organizational competitiveness, service quality, and user satisfaction through technology-enabled processes and communication systems [12, 14]. In governmental settings, ICT-oriented leadership therefore appears to function not only as an internal managerial mechanism but also as a driver of public value creation and citizen-centered governance.

Overall, the findings of this study suggest that ICT-oriented leadership behavior in governmental organizations is a comprehensive and multidimensional construct involving strategic transformation, technological competence, ethical governance, organizational learning, digital participation, data-driven management, and technological resilience. The identified model demonstrates that leadership in digitally transforming organizations requires simultaneous attention to human, technological, organizational, and governance-related dimensions. Consequently, ICT-oriented leadership should be understood as a dynamic leadership paradigm capable of facilitating sustainable digital transformation, organizational agility, administrative justice, and intelligent governance in public organizations [2, 9].

One limitation of the present study was that the qualitative data were collected from experts associated primarily with governmental and registration-related organizations, which may limit the generalizability of the findings to other public sectors or private organizations. In addition, the study relied on expert perceptions and experiences rather than direct observation of leadership behaviors in operational environments. Another limitation concerns the contextual nature of qualitative analysis, where interpretations may be influenced by organizational culture and administrative conditions specific to the studied institution. Furthermore, the study focused mainly on identifying leadership components and did not quantitatively test causal relationships among the extracted dimensions.

Future studies are recommended to validate the proposed leadership behavior model quantitatively using structural equation modeling and larger organizational samples across different governmental sectors. Comparative studies between public and private organizations could also provide deeper understanding regarding similarities and differences in ICT-oriented leadership behaviors. Future researchers may additionally investigate the relationship between digital leadership and outcomes such as organizational agility, employee innovation, citizen satisfaction, cybersecurity readiness, and digital governance effectiveness. Longitudinal studies examining how digital leadership evolves during organizational transformation processes may also contribute significantly to the development of leadership theory in digitally transforming environments.

From a practical perspective, governmental organizations should invest in systematic digital leadership development programs focused on technological literacy, strategic innovation, cybersecurity awareness, data-driven decision-making, and

digital communication competencies. Organizational leaders should create supportive digital cultures that encourage participation, knowledge sharing, technological experimentation, and continuous learning among employees. Policymakers and senior administrators should also strengthen communication infrastructures, electronic monitoring systems, and integrated digital service platforms to facilitate transparency, efficiency, and citizen-oriented governance. Finally, organizations should establish ethical and security-oriented digital governance frameworks to ensure that technological transformation remains aligned with public trust, accountability, fairness, and sustainable organizational development.

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### Authors' Contributions

All authors equally contributed to this study.

### Declaration of Interest

The authors of this article declared no conflict of interest.

### Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

### Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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