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**A Qualitative Study on the Influencing Factors of E-Government Adoption to Improve Public Trust in Local Government: Case Study of Rokan Hulu Municipality****Rudy Fadrial, Sujianto, Harapan Tua Ricky Freddy Simanjuntak, Welly Wirman**[rudyfadrial@gmail.com](mailto:rudyfadrial@gmail.com), [sujianto@lecturer.unri.ac.id](mailto:sujianto@lecturer.unri.ac.id), [harapan.tua@lecturer.unri.ac.id](mailto:harapan.tua@lecturer.unri.ac.id),[wellywirman@lecturer.unri.ac.id](mailto:wellywirman@lecturer.unri.ac.id)

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**Article Information**

Submitted : 17 Apr 2024

Reviewed: 8 May 2024

Accepted : 15 Jun 2024

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**Keywords**e-government,  
qualitative, local  
government, TOE,  
indonesia

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**Abstract**

Amidst global public trust challenges, e-government emerges as a promising solution to bolster trust. In Indonesia, rural areas face obstacles hindering effective e-government implementation. This paper explores Rokan Hulu Municipality's initiatives, aiming to understand e-government's impact on public trust at the rural/district level, bridging critical knowledge gaps. This study employs a qualitative approach to investigate the factors influencing e-government adoption. Primary data is gathered through interviews with key stakeholders, supplemented by secondary data from organizational documents. Employing open and axial coding, this study organizes findings to the Technology-Organization-Environment framework. Within the technological dimension, obstacles such as infrastructure; integration and interoperability; data security and confidentiality; and service providers, third parties, or vendors emerge as significant barriers. In the organization dimension, culture, organizational capability, budget constraints, human resource quality, perceptions, bureaucracy, and strategy become challenges, with organizational capability and strategy showing mixed impacts due to incomplete initiatives and limited inter-agency coordination. In environment dimension, digital divide, regulatory availability, and public participation become inhibiting factors, while political intervention becomes the driving factor.

## A. Introduction

Public trust constitutes the “*bedrock*” of a robust democratic society, securing the populace's belief in the government's capacity to serve their needs and uphold societal well-being [1]–[4]. This trust flourishes through the implementation of good governance principles, which prioritize responsiveness, accountability, and transparency in governmental activities [5]. Effective communication channels, extending to all segments of society including marginalized communities, are vital for constructing and preserving public trust [2], [6], [7]. The intricate interplay between public trust and governance mechanisms underscores the significance of trust in promoting citizen adherence to regulations, endorsement of policies, and active participation in democratic processes [3], [8], [9].

In an era marked by dwindling public trust globally, e-government emerges as a promising solution, particularly in developed nations, to bolster trust within local communities [7], [10]. Studies conducted in various countries, including Jordan, Nigeria, and Pakistan, have demonstrated the positive impact of e-government initiatives on public trust by facilitating transparent interactions between governments and citizens [11]–[13]. Leveraging e-government platforms for public service delivery not only enhances service quality but also addresses administrative inefficiencies, thereby reinforcing public trust in governmental processes [14]–[16].

Amidst the challenges posed by globalization, national unity, and public trust in Indonesia, the government has prioritized adopting e-government to enhance trust, resulting in an improved global ranking [2], [17]. However, obstacles persist, particularly in rural areas, where factors like social influence, infrastructure conditions, and Information & Communication Technology (ICT) capabilities impede effective e-government implementation [18], [19]. The implementation of the Electronic-Based Government System (SPBE) at both central and regional/rural levels underscores Indonesia's commitment to digital transformation, focusing on governance, management, and electronic service delivery [17]. In Rokan Hulu Municipality, the local government's initiatives to promote e-government adoption have yielded promising results, evident in the consistent enhancement of electronic-based public services—marking the only dimension that satisfies the national target in the last three years.

Nevertheless, significant gaps persist in understanding the influence of public services on public trust, particularly at the district/rural level, necessitating further research to address these critical knowledge gaps [1], [19], [20]. With limited studies focusing on e-government provision at the micro-level government, there is a pressing need to explore the influencing factors by local governments like Rokan Hulu Municipality in the adoption of e-government to improve public trust. This research thus aims to bridge these gaps by conducting a qualitative study on the adoption of e-government in the local government of Rokan Hulu Municipality, Indonesia.

The authors structure this study as follows: Section B explores the theoretical background supporting the research; Section C explains the research methodology used; Section D presents the research findings, including their implications and limitations; and Section E concludes the study and proposes suggestions for future research.

## **B. Theoretical Background**

This section delves into the theoretical background shaping this study.

### **Electronic Government (E-Government)**

In the realm of digital governance, the adoption of e-government services has reshaped how citizens interact with local governments, especially in countries like Indonesia, where decentralization has amplified the roles of local authorities [21]–[23]. Building upon insights from Norris [24] and Moon [25], who highlight the transformative potential of digital technology in fostering civic engagement and accountability, this theory aims to uncover the intricate relationship between e-government services and public trust within Indonesian local governance. By integrating Fukuyama's seminal works on trust and governance [26], it seeks to clarify how e-government initiatives influence the formation of trust and legitimacy in governmental institutions.

The theory suggests that e-government adoption plays a pivotal role in enhancing public trust in Indonesian local governments through various mechanisms. Firstly, drawing inspiration from social capital theory [1], [27], [28], e-government is expected to promote transparency and equal access to information, thus reducing power disparities and encouraging community participation. Secondly, based on concepts of procedural justice and institutional trust [29]–[31], the theory proposes that the responsiveness and efficiency of e-government services shape positive perceptions of government legitimacy and procedural fairness. Lastly, leveraging ideas of digital citizenship [32]–[34], the theory explores how e-government platforms facilitate citizen-state interaction, reshaping governance dynamics and nurturing a sense of civic ownership and responsibility.

In e-government, there are four main dimensions: government-to-government (G2G), government-to-citizen (G2C), government-to-employee (G2E), and government-to-business (G2B). Yildiz [35] then broadened this framework by proposing two additional categories: government-to-civil societal organizations (G2CS) and citizen-to-citizen (C2C). Meiyanti et al. [36] added that in recent decades, e-government has seen the emergence of several more categories, including citizen-to-government (C2G), business-to-government (B2G), government-to-nonprofit (G2N), and nonprofit-to-government (N2G). However, earlier research has primarily focused on the fundamental e-government concepts: G2G, G2C, G2E, and G2B. Joseph [37], Epstein [33], and Sihotang et al. [19] also highlight that the design and classification of e-government services are adapted to various administrative levels, spanning from national to district/rural levels. Therefore, the implementation of e-government varies and necessitates adaptation to the context.

The widespread adoption of e-government services, observed from India to Ecuador [38]–[41], not only improves citizen convenience and administrative transparency but also enhances democratic processes and economic vitality. With streamlined service delivery and increased citizen engagement, e-government promotes democratic participation while boosting economic growth through e-commerce platforms and attracting investments [42]–[44]. This comprehensive framework highlights the need for policymakers to prioritize user-centric e-government platforms to strengthen public trust and engagement, calling for further empirical studies to validate the proposed hypotheses and inform evidence-based policymaking aimed at harnessing digital technology for governance improvement.

Moreover, it lays the groundwork for interdisciplinary research, facilitating a nuanced understanding of governance dynamics in the digital age.

### **Technology-Organization-Environment (TOE)**

Prior studies have employed the TOE framework to examine and classify challenges and success factors in e-government research [45]–[51]. This framework posits three key dimensions: *Technology*, *Organization*, and *Environment* [52]. In the realm of e-government, this framework is pivotal as it offers a structured method for identifying and tackling challenges comprehensively.

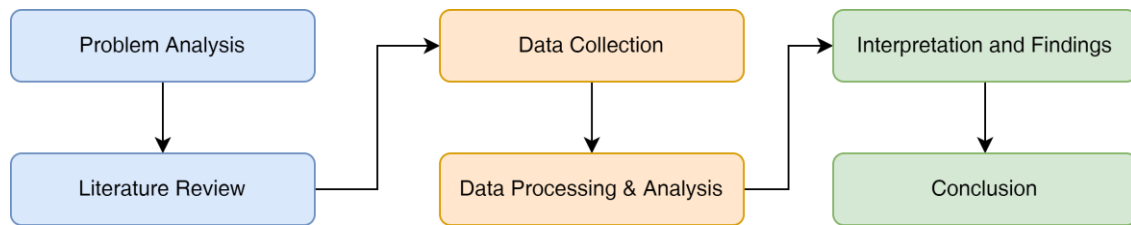
The *Technology* dimension focuses on issues concerning infrastructure and technological tools, such as interoperability and data security [45]–[49], [51]. The *Organization* dimension encompasses challenges linked to the internal functioning of government agencies, including resistance to change and organizational capability [46]–[50]. The *Environment* dimension considers external factors such as legal frameworks and regulations, citizen readiness, and financial limitations [45]–[51]. This comprehensive viewpoint thus remains essential for crafting effective strategies, facilitating successful e-government implementation, and ensuring alignment with organizational objectives, technological capabilities, and regulatory environments.

### **C. Research Method**

Employing a case study approach, this study explores the intricate factors that influence e-government adoption in a local government setting. The chosen qualitative methodology enables a thorough investigation of the phenomenon within its real-life context, fostering a deep analysis and comprehension of the underlying dynamics. The process of collecting data involves the acquisition of primary data through interviews with key stakeholders involved in e-government implementation, offering firsthand insights into the influencers of adoption. Additionally, secondary data from organizational documents such as policies and reports will complement interview data, providing additional context and background information.

Following this, the qualitative data gathered undergoes systematic analysis using NVIVO12 software, facilitating efficient management and analysis. Through open coding, the data will be deconstructed into meaningful segments to identify recurring themes and patterns, initially revealing insights into the factors influencing e-government adoption. Subsequently, axial coding will further structure and categorize the data based on relationships and connections between various themes, aiding in the development of a comprehensive understanding of adoption influencers within the local government context.

**Figure1** depicts the research flow in this study:



**Figure1.** Research Flow

### 1. Problem Analysis

This study begins by identifying specific problems or gaps in existing knowledge related to e-government services and public trust. This initial stage involves a thorough examination of the current state of affairs, identifying areas where further research is needed to improve understanding of the dynamics between e-government services, individual perceptions, and public trust.

### 2. Literature Review

The literature review plays a crucial role in conducting a thorough examination of previous studies concerning e-government services. During this stage, researchers synthesize and analyze related studies, theories, and models.

**Table 1.** Overview of participants.

Code	Organization	Interviewee(s)	Number of Participants
XA	Social Services, Women's Empowerment and Child Protection/ <i>Dinas Sosial, Pemberdayaan Perempuan dan Perlindungan Anak</i>	Head , Executive (Echelon 3), Manager (Echelon 4), Staff	7
XB	Office of Communication and Informatics/ <i>Dinas Komunikasi dan Informatika</i>		5
XC	Investment and One-Stop Integrated Service Office/ <i>Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu</i>		4
XD	Population and Civil Registration Office/ <i>Dinas Kependudukan dan Pencatatan Sipil</i>		1
XE	Regional General Hospital/ <i>Rumah Sakit Umum Daerah</i>	Director, Manager	2

### 3. Data Collection

The authors conduct interviews with key stakeholders involved in e-government initiatives within the selected local government (See Table 1). Simultaneously, the authors gather relevant organization documents pertaining to e-government projects and policies. Then, the authors import interview transcripts and organization documents into NVIVO12 for data management and organize the data systematically, categorizing it based on themes and topics relevant to the research objective. The author conducted face-to-face interviews between December 1st and 19th, 2023, enabling a comprehensive understanding of the relevant agencies from diverse perspectives.

#### *4. Data Processing & Analysis*

Processing qualitative data with NVIVO involves importing data, organizing the data into nodes, and systematically coding to identify patterns. The authors use both inductive and deductive approaches, creating a hierarchy of codes and ensuring coherence through continuous comparison. The memo feature aids reflection and decision tracking, leading to synthesized findings supported by quotes. Qualitative analysis in Rokan Hulu Municipality utilized open coding for pattern identification and axial coding for structuring themes. Open coding allows unbiased exploration of e-government service data, while axial coding establishes relationships between themes. This method clarifies interactions within e-government provision, offering a comprehensive understanding of service dynamics..

#### *5. Interpretation and Findings*

This qualitative analysis yielded significant findings, including challenges related to accessibility for certain demographics and the influence of successful online platforms. Axial coding elucidates the interconnectedness of these themes, elucidating, for instance, how resolving accessibility issues directly impacts citizen satisfaction. A qualitative approach centered on open coding and axial coding not only unveils the landscape of e-government services in Rokan Hulu Regency but also establishes a groundwork for garnering insights and recommendations to enhance the efficacy and inclusivity of such services.

#### *6. Conclusion*

The authors then summarize the key findings of the study and draw conclusions regarding the factors influencing e-government adoption in the local government.

### **D. Result and Discussion**

During the qualitative data analysis phase, the author employed open coding to categorize similar information and axial coding to organize data into the TOE framework. To minimize bias, the author adopted a neutral perspective while comprehensively understanding the interview transcripts. The coding process involved systematically analyzing the data line by line using NVivo nodes to capture interviewees' viewpoints. By comparing newly coded data with previously coded segments, similarities and differences were identified, refining and expanding codes and categories in axial coding.

The accumulated codes were then organized into broader categories based on shared characteristics or meanings, laying the groundwork for a comprehensive understanding of the phenomenon under study. This iterative process continued until data saturation was achieved, indicating no emergence of new codes or categories. Subsequently, the codes were grouped into TOE themes, offering insights from three perspectives on e-government adoption in Rokan Hulu Municipality.

The author further developed theoretical coding to conceptualize relationships and patterns within the data. Ultimately, the integration of codes and categories formed a cohesive theoretical framework, providing profound insights into the complexity of interviewees' experiences and perspectives. In the final stage, the author aimed to integrate the theoretical framework to ensure that it not only accurately represented the data but also contributed to a broader theoretical

understanding. Table 2 illustrates 15 primary themes derived from interviews with research sources. The author subsequently categorizes the codes/information gathered into the TOE framework and charts the impact of each piece of information on the implementation of e-government in Rokan Hulu Regency.

**Table 2.** Overview of influencing factors

Category/Factor	Organization				
	XA	XB	XC	XD	XE
<b>Technology</b>					
Infrastructure	-	-	-	-	-
Integration and Interoperability	-	-	-	-	-
Data Security and Confidentiality	-	-	-	-	-
Service Provider/3 <sup>rd</sup> Party/Vendor					-
<b>Organization</b>					
Culture/Ego	-	-	-	-	-
Organizational Capability	±	±	±	±	-
Budget	-	-	-	-	-
Human Resources	-	-	-	-	-
Organizational Perception	-	-	-	-	-
Bureaucracy/Inter-Agency Coordination	-	-	-	-	-
Organizational Strategy	±	±	±	±	±
<b>Environment</b>					
Digital Divide	-	-	-	-	
Political Intervention	+	+	+	+	
Availability of Regulation	-	-	-	+	+
Public Participation	-	-	-	-	-

+ Positive influence, - Negative influence, ± Mixed influence

### Technological Factors

This category presents four challenges, each exerting a negative influence on the implementation of e-government. These challenges include infrastructure; integration and interoperability; data security and confidentiality; and service providers, third parties, or vendors.

#### 1. Infrastructure (-)

Previous studies [36], [45]–[50], [53], [54] underscores significant challenges in delivering e-government services in Rokan Hulu District, primarily stemming from inadequate infrastructure. Addressing the digital literacy gap, enhancing access, and fostering connectivity through comprehensive digital infrastructure investments are urgently needed. However, challenges such as budget constraints, lack of prioritization, lengthy procurement processes, and coordination issues with service providers impede system updates and maintenance.

Interviews highlight the need for robust infrastructure to ensure equal access to e-government services. The current reactive approach adopted by various departments/agencies exacerbates the urgency gap in infrastructure management, hindering service delivery efficiency. A proactive approach thus becomes imperative to address these challenges comprehensively and ensure inclusivity. Systemic infrastructure issues significantly impact e-government service providers, compromising service integrity. Strategic changes prioritizing infrastructure development and adopting a prevention perspective become necessary to overcome these barriers.

#### 2. Integration & Interoperability (-)

In Rokan Hulu Municipality Government, the development of e-government services encounters significant challenges in integration and interoperability, mainly due to coordination challenges among various agencies. Despite advancements in technology and the introduction of e-catalogues, disparities persist in *data formats, structures, and systems* among government agencies, hindering smooth information exchange and collaboration. This fragmentation extends to data management, where a lack of a unified strategy results in inefficiencies and the underutilization of vital information. Key stakeholders (XB, XD, and XE) highlight the elusive nature of achieving uniformity in data management and establishing coordinated processes. These challenges not only hinder effective governance but also impede the establishment of a cohesive digital infrastructure essential for modern e-government services.

The complexity of integration and interoperability issues in Rokan Hulu Municipality Government mirrors findings from previous studies, emphasizing the persistent barriers in e-government service development [36], [46], [47], [49]–[51], [54]–[56]. To address these obstacles, collaborative efforts remain crucial to establish standardized protocols and shared frameworks. By fostering cooperation among agencies and implementing comprehensive strategies for data management, the government can mitigate fragmentation and promote synergy, ultimately unlocking the potential benefits of shared data for increased efficiency and informed decision-making.

### 3. *Data Security & Confidentiality (-)*

Securing data and maintaining confidentiality in e-government services poses a critical obstacle to the sustainable development of secure digital governance. This study's findings suggest a prevalent focus on staff integrity rather than technical competence among service providers, revealing a potential imbalance in addressing data protection across agencies like XA and XE. Additionally, the absence of a standardized framework for data protection compounds the challenge of delivering interconnected and secure e-government services, resulting in variations for data protection practices among agencies—potentially exposing vulnerabilities in the overall information security architecture.

Addressing these issues requires establishing a comprehensive and standardized framework encompassing regular data backups, robust encryption strategies, and stringent security measures. It demands collective efforts to instill a culture of cybersecurity awareness and ensure consistent adoption of the latest technologies and protocols across government agencies involved in e-government service delivery. These initiatives remain essential for enhancing e-government infrastructure against cyber threats and preserving the confidentiality of citizens' information. This study's findings underscore the challenge of ensuring data security and confidentiality in e-government services, echoing previous studies highlighting similar concerns [46], [48]–[51], [53], [54], [56], [57].

### 4. *Service Provider/3rd Party/Vendor (-)*

Rokan Hulu Municipality Government encounters a significant challenge due to its dependence on third-party vendors for e-government services and security—exposing potential vulnerabilities and jeopardizing public service integrity. While outsourcing to certified consultants might appear prudent, this approach inadvertently exposes the government to vulnerabilities. The ever-evolving



landscape of cyber threats renders static certification-based strategies inadequate, necessitating a proactive and internally managed security maintenance approach. Moreover, relying on vendors to address disparities in systems, business processes, and technology standardization introduces additional complexity and potential points of failure, especially concerning Regional General Hospitals (XE). E-government services encompass diverse technologies and business processes across various government departments, and while vendors facilitate integration, excessive reliance on them can impede departmental autonomy and adaptability. This dependence restricts the flexibility and responsiveness of e-government infrastructure, hindering timely updates, upgrades, or modifications to meet evolving needs.

To effectively tackle these challenges, Rokan Hulu Municipality Government must embrace a holistic approach that balances the advantages of vendor integration with the necessity for internalized security and adaptability. Establishing robust internal security protocols and capacity-building initiatives can bolster the government's resilience against emerging cyber threats. Additionally, nurturing in-house expertise and fostering collaboration between departments can mitigate reliance on external vendors and enhance organizational agility. By investing in comprehensive training programs and fostering a culture of innovation and knowledge-sharing, the government can empower its workforce to address evolving technological needs independently. Furthermore, establishing clear governance structures and communication channels between departments and vendors can facilitate efficient collaboration while upholding accountability and transparency in e-government initiatives. Ultimately, by prioritizing internal security and autonomy alongside vendor integration, Rokan Hulu Municipality Government can ensure the reliability, security, and adaptability of its e-government services.

### **Organizational Factors**

In organization dimension, this study identifies several factors influencing the implementation of e-government by Rokan Hulu Municipality Government. These factors include sectoral culture/ego, organizational capability, budget constraints, quality of human resources, organizational perceptions, bureaucracy/inter-agency coordination, and organizational strategy. Two factors, organizational capability and strategy, have a mixed impact, with initiatives underway but not fully supportive. For instance, while strategies exist, they only partially address issues and lack inter-agency coordination.

#### **1. Culture/Ego (-)**

Ego-driven attitudes and entrenched organizational cultures within government agencies pose significant barriers to e-government adoption. The fragmented approach to service provision, influenced by individual agency egos, obstructs the integration of crucial data such as civil registration information—vital for improving service efficiency and consistency. This siloed behavior also worsens disparities in infrastructure procurement practices, deepening the digital divide, even within government. The lack of collaboration in infrastructure development further hampers the establishment of a standardized technology framework. The disjointed dissemination of e-government service information further highlights the

persistence of organizational silos, impeding citizens' understanding of the broader e-government landscape. Overcoming these barriers necessitates promoting collaboration, breaking down silos, and prioritizing citizen-centric approaches to enhance service delivery and bridge the digital divide in e-government initiatives.

## *2. Organizational Capability ( $\pm$ )*

Organisational capability stands as a significant challenge, as well as a key factor, in e-government service delivery. Identified key issues encompass difficulties in achieving effective cross-sector/agency coordination: from bureaucratic nightmares to misaligned priorities. These challenges not only impede timely service delivery but also thwart potential synergies from collaborative efforts. The imperative for efficient communication and cooperation across sectors becomes evident, necessitating strategic initiatives to dismantle silos and foster a more integrated approach to e-government service delivery. Additionally, the uneven dissemination of service information by e-government service delivery agencies adds complexity to organisational capabilities. While some local government agencies exhibit commendable efforts in comprehensive information dissemination through both online and offline channels, others struggle to adopt a cohesive strategy. The inconsistent utilization of online media, such as social platforms, alongside traditional mechanisms like pamphlets and books, further compounds the issue.

Moreover, while the conceptualisation of SPBE framework reflects a forward-looking approach, its implementation remains deficient. Addressing the knowledge gap thus becomes imperative, necessitating not only technical guidance but also concerted efforts in socialisation and practical implementation. Therefore, Rokan Hulu Municipality Government must tackle organisational challenges for the successful implementation of e-government service delivery with a holistic approach that integrates technological innovation, effective communication, and a commitment to bridging the knowledge gap within the government organizational structure.

## *3. Budget (-)*

Budgetary challenges pose a significant constraint for organizations striving to implement e-government services effectively, encompassing the transformative potential of digital governance [36], [46], [47], [50], [54]–[56]. These constraints reflect previous studies' findings that highlight limitations in financial resources allocated for the implementation and operationalization of e-government services. The intricate and bureaucratic nature of budget management in the public sector contributes to challenges in allocating funds adequately across various countries. Despite the growing acknowledgment of the significance of e-government services, there is a tendency to prioritize other maintenance and development activities, resulting in inadequate financial support for comprehensive digital service integration.

Furthermore, these budgetary challenges are compounded by financial constraints at the local/district level, as observed in Rokan Hulu Municipality Government, where "budget cuts" impede efforts to fully leverage e-government services, particularly within the Office of Communication and Informatics (XB). The lack of sufficient funds not only hampers the expansion of digital governance but also restricts the optimization of existing services, creating a disparity between

anticipated potential and actual realization of e-government transformative capabilities.

Additionally, budgetary limitations are exacerbated by the rigidity in the process of change and budget management, hindering the ability to adapt to evolving needs and emerging priorities. Addressing these budget-related challenges thus necessitates an approach that not only underscores the importance of digital governance but also addresses the requirement for flexible and adaptive budget mechanisms to comprehensively support e-government initiatives in realizing their full potential.

#### 4. *Human Resources (-)*

In the adoption of e-government, challenges stemming from human resource (HR) factors manifest across various dimensions, notably evident in the notable disparity in both quantity and quality of knowledge and skills among employees within Rokan Hulu Municipality Government offices/agencies. This discrepancy not only hampers the government's preparedness to effectively roll out e-government initiatives but also impedes progress in embracing digital transformation. The engagement of employees, particularly within the Office of Communication and Informatics (XB), underscores a lack of enthusiasm and/or comprehension regarding the potential benefits of e-government initiatives. To surmount these hurdles, strategic measures become imperative to enhance government employees' competencies, ensuring their grasp of technological aspects, services, and business processes.

Moreover, the scarcity of competent HR exacerbates the complexity of the challenges at hand. The organization's failure to enhance the caliber of its workforce not only signifies direct operational inefficiencies but also poses enduring risks to the sustainability of e-government services. Reliance on technical guidance and training from provincial and ministerial (national) levels has rendered offices/agencies reliant on external initiatives. This shortage extends beyond technical skills alone, encompassing a deficiency in understanding service, information technology, and business domains. Consequently, the constrained HR pool compounds these challenges, erecting obstacles to the sustainable implementation and operationalization of e-government services. These findings support previous studies highlighting HR as an obstacle in government contexts. To tackle these HR challenges effectively, a comprehensive approach is imperative to augment both the quantity and quality of government employees' knowledge and skills, while fostering a culture of innovation and efficiency in the digital era [36], [45], [56], [46]–[50], [53]–[55]

#### 5. *Organizational Perception (-)*

The organizational perspective on e-government adoption in the local agencies—particularly within the Social Services, Women's Empowerment, and Child Protection (XA)—highlights a debate surrounding the assessment of the significance of these services. Despite the global trend towards digital governance, some agencies in Rokan Hulu District still grapple with differing views on the central role of e-government services in their operations. From procurement processes and budget management to the development of necessary infrastructure, there is a prevailing perception that e-government merely functions as a supportive element rather than a strategic force capable of substantially enhancing public trust.

This variations in perception is reflected in the limited availability of crucial services and the incomplete implementation of the SPBE across various agencies. The main challenge lies in harmonizing organizational orientations with the transformational potential of e-government, transcending the view of it as a mere adjunct and recognizing its strategic role in improving transparency, efficiency, and public trust. The slow adaptation of e-government services as a strategic imperative reflects broader organizational resistance to paradigm shifts. Some agencies remain entrenched in the tradition of conventional service provision, viewing digitalization as an add-on rather than a force for fundamental change. This perspective not only creates barriers to technology adoption but also impedes the comprehensive integration of e-government into organizations. Addressing these challenges necessitates urgent cultural change within institutions, underscoring the strategic importance of e-government in shaping public perception and fostering the creation of responsive and efficient governance.

#### 6. *Bureaucracy/Inter-Agency Coordination (-)*

Prior studies have explored the intricacies of bureaucracy and inter-agency coordination within governmental settings [36], [46], [50], [56]. This study echoes these findings, emphasizing the challenges within Rokan Hulu Municipality Government. Bureaucracy and inter-agency coordination present significant hurdles to the successful implementation of e-government initiatives. The local government's bureaucratic structure often entails lengthy approval processes and hierarchical decision-making, leading to delays in adopting digital solutions. Moreover, agencies also operate independently, each with its own systems and databases, resulting in a lack of coordination, fragmented e-government adoption, redundant systems, and inefficiencies in public service delivery. Additionally, differing levels of technological readiness among departments further complicate coordination efforts. To address these obstacles, Rokan Hulu Municipality Government must prioritize fostering collaboration and communication among departments, simplifying bureaucratic processes, and investing in digital capabilities across all agencies.

#### 7. *Organizational Strategy ( $\pm$ )*

In line with prior research [46], [50], [54], [56], [58], Rokan Hulu Municipality Government in Indonesia encounters significant challenges in implementing e-government services due to organizational strategy issues. The identified hurdles underscore concerns about the seamless integration of digital services, revealing a gap between planning and execution—which highlights the complexities of translating strategic goals into tangible results. There is an urgent need for a well-structured and interconnected framework for e-government strategies, which is currently lacking. Various agencies (XA to XE) acknowledge the inadequacy of existing strategies, reflecting a widespread acknowledgment within government entities that current approaches fall short in meeting the demands of the digital era.

Furthermore, the presence of strategies without optimal implementation, as seen in Investment and One-Stop Integrated Services (XC), raises concerns about execution capability and underscores the need to align vision with actionable plans. Challenges highlighted by the Office Communication and Informatics (XB) regarding low employee participation and limited internet access indicate numerous barriers, extending beyond strategic documents to practical obstacles. The absence of a

comprehensive roadmap and reliance on partial solutions, such as persisting with traditional population administration by the Population and Civil Registration Office (XD), reveal a fragmented approach that could hinder overall progress in e-government services. Pioneering initiatives by Investment and One-Stop Integrated Services (XC), exemplified by the introduction of the "Apa Boss" application, alongside low adoption rates across institutions, underscore the importance of cohesive and standardized strategies to ensure consistent advancements in government service digital transformation.

### **Environmental Factors**

In exploring the dimensions or characteristics of the environment, four main factors emerged as significant influencers of e-government implementation: *digital divide*, *regulatory availability*, *public participation* as inhibiting factors, and *political intervention* as a positive factor. Delving into the regulatory availability factor, it becomes evident that while two departments/agencies have a regulatory framework in place for e-government implementation, three others are lacking in this regard. However, amidst these challenges, the research highlights a glimmer of hope in the form of political intervention, which stands out as the sole positive finding. This underscores the pivotal role of political will and support in driving effective e-government initiatives forward, potentially bridging gaps and facilitating regulatory enhancements to overcome hurdles like the digital divide and bolster public participation.

#### **1. Digital Divide (-)**

Drawing from insights in previous studies [36], [47], [53], [54], [56], [59]–[61], a similar challenge emerges in Rokan Hulu Municipality: *digital divide*. This phenomenon signifies the community's limited access to and proficiency in utilizing ICT, impeding their ability to fully leverage its benefits. As recipients of public services, the community still grapples with inadequate digital literacy, constraining their capacity to capitalize on available resources. The persistence of the digital divide underscores the enduring barriers thwarting equitable access to e-government services. Despite the proliferation of technological innovations, insufficient internet accessibility remains a significant hurdle, particularly in Rokan Hulu Municipality, thwarting the implementation of e-government's full potential. This digital disparity is not solely attributed to infrastructural inadequacies but is also compounded by limited awareness and education levels within certain demographic segments.

Interview findings illuminate entrenched perceptions within the community, equating public services with labyrinthine bureaucratic processes. Efforts by the Social Services, Women's Empowerment, and Child Protection (XA) to confront this challenge entail a multifaceted approach, integrating both online and offline socialization strategies. These efforts underscore the imperative of effecting comprehensive shifts in public perceptions and transitioning from antiquated bureaucratic norms to more streamlined processes. Furthermore, in addressing the digital divide, Regional General Hospital (XE) has embarked on digitizing various services while providing direct community access, reflecting a proactive stance in bridging the digital chasm. This proactive stance aligns with the prevailing consensus that technological advancements should not merely enhance operational

efficiency but also serve as inclusive instruments, ensuring e-government services are accessible and comprehensible across diverse societal strata.

## 2. *Political Intervention (+)*

Political intervention and support play crucial roles in driving the successful adoption of e-government initiatives in Rokan Hulu Municipality, rejecting the notion by previous studies [47], [50], [51], [55], [56]. This study however demonstrates how strong political determination translates into concrete actions, driving forward the implementation of e-government projects. In Rokan Hulu Municipality, proactive political leadership and consistent support from local authorities have laid the groundwork for significant progress in e-government adoption. By leading digital transformation efforts and advocating for policies that prioritize digital governance, political leaders have created an environment conducive to the effective implementation of e-government initiatives. Albeit challenges, this proactive approach not only energizes governmental endeavors but also encourages collaboration across various sectors, including government agencies, private sector partners, and civil society organizations—although limited.

Furthermore, sustained political intervention and support have enabled Rokan Hulu Municipality to leverage e-government solutions (yet slow) in enhancing service delivery standards, promoting transparency, and empowering citizens in their interactions with local governance structures. This comprehensive approach has yielded tangible benefits, significantly contributing to improved governance practices and socioeconomic development in the region. The case of Rokan Hulu Municipality serves as evidence of the critical role of political leadership in steering e-government initiatives towards success, highlighting the transformative impact that proactive political intervention can have on governance frameworks and citizen engagement mechanisms alike.

## 3. *Availability of Regulation ( $\pm$ )*

This study highlights a significant factor: the presence of supportive regulatory frameworks for e-government services. This challenge aligns with previous studies, emphasizing the weak regulatory backing in e-government implementation [36], [46], [47], [49], [50], [55], [56]. For instance, albeit having Law No. 24 of 2013 as a reference regulation, the absence of derivative regulations at the district level for e-government-based population administration complicates adaptation to evolving technologies in XD. This underscores the need for ongoing cross-sector coordination, highlighting the ad-hoc approach in facilitating e-government implementation and the potential inefficiencies and barriers to integrating new e-government services in the future.

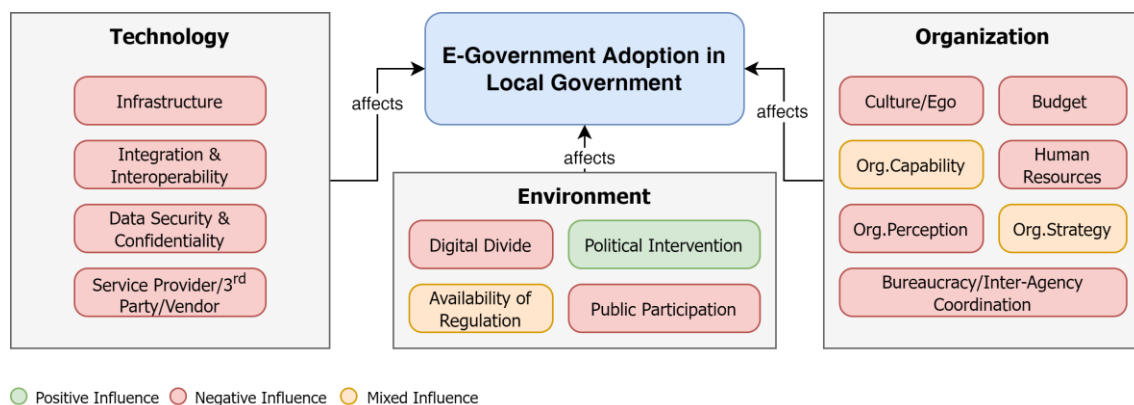
Moreover, other government agencies, such as the Regional General Hospital (XE), recognize these challenges, relying on "guidelines" for e-government, indicating a gap in practical regulations and potentially resulting in inconsistent provision of e-government services. This concern is echoed by XA and XB, prompting these agencies to initiate innovative approaches to establish more efficient, effective, reliable, and trustworthy public service regulations at the unit level. This emphasizes the importance of laying a robust legal foundation to accommodate technological advancements and anticipate their future developments.

## 4. *Public Participation (-)*

The Rokan Hulu Municipality Government grapples with another significant challenge: the limited involvement of the public in e-government services, as noted in previous studies [36], [46], [47], [49], [50], [55], [56]. Tackling this issue demands a multifaceted strategy and targeted interventions. Despite proactive government initiatives to promote these services, obstacles persist, impeding broader participation. XB and XE stress the pivotal role of robust and inclusive digital infrastructure in fostering greater public engagement. This highlights the importance of enhancing awareness about digital service accessibility and ensuring that the infrastructure is user-friendly, accessible, and affordable to diverse population segments.

Moreover, XC actively endeavors to broaden public involvement. Yet, the complexity of these challenges extends beyond mere information dissemination to tackling potential barriers hindering citizens from fully embracing e-government services. While the government can influence factors like the Public Satisfaction Index, probing deeper into the underlying reasons for underutilization is imperative. In essence, adopting a comprehensive and adaptable approach is critical to reshape the current landscape and cultivate an environment where the community not only acknowledges the presence of digital services but also actively engages with and derives benefits from them.

Therefore, based on the factors mentioned above, the authors posit that the following adequately illustrates the influencing factors in e-government adoption in local government. (See **Figure2**).



**Figure2.** Influencing Factors

## E. Conclusion

This study thoroughly examines qualitative data gathered from stakeholders in Rokan Hulu Municipality, aiming to understand the challenges and opportunities associated with adopting e-government initiatives. Employing open and axial coding methodologies, this study organizes interview data according to the TOE framework, providing valuable insights into the municipality's e-government endeavors. Within the technological dimension, obstacles such as infrastructure; integration and interoperability; data security and confidentiality; and service providers, third parties, or vendors emerge as significant barriers. Similarly, sectoral culture/ego, organizational capability, budget constraints, quality of human resources, organizational perceptions, bureaucracy/inter-agency coordination, and organizational strategy, complicate the implementation process. Environmental

factors, such as the digital divide and regulatory constraints, further add to the complexities of e-government adoption, underscoring its multifaceted nature.

Nevertheless, despite these challenges, political intervention emerges as a crucial driver of progress in e-government implementation. Despite regulatory gaps and organizational constraints, political will and support play pivotal roles in propelling the municipality's digital transformation efforts forward. By harnessing political intervention to address gaps, strengthen regulatory frameworks, and promote public involvement, Rokan Hulu Municipality can navigate the complexities of e-government adoption and unlock the potential benefits of digital governance.

In conclusion, this study underscores the importance of taking a comprehensive approach to e-government implementation, addressing technological, organizational, and environmental factors while leveraging political backing. By incorporating insights from this study and strategically leveraging political support, local governments like Rokan Hulu Municipality can establish a more inclusive, efficient, and transparent governance framework that meets the evolving needs of citizens in the digital era.

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