

# Beyond Rhetoric: An Analysis of the Structural Obstacles to the Digital Transformation of Cameroonian Local Authorities

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## Abstract

The digital transformation of Cameroonian local authorities is regularly presented as a strategic lever for administrative modernization, improved public services, and strengthened citizen participation. However, beyond institutional rhetoric and stated strategies, results remain limited and fragmented. This article offers a critical analysis of the structural obstacles hindering this transformation, drawing on a comprehensive review of the international literature on e-government, ICTs for development, and public governance in developing countries. The study highlights a complex network of infrastructural, financial, organizational, institutional, socio-cultural, and legal constraints. It demonstrates that weak digital infrastructure, the budgetary dependence of local authorities, skills gaps, fragmented initiatives, and insufficient multi-level coordination constitute major obstacles to territorial digital transformation. These factors are exacerbated by the digital divide among citizens, the persistence of informal practices, and a regulatory framework that remains only partially operational. Drawing on international comparisons and documented African experiences, we propose strategic pathways based on a progressive, contextual, and systemic approach. This approach advocates the gradual construction of a territorial digital ecosystem integrating basic infrastructure, local capacity building, coordinated governance, and citizen ownership. The analysis concludes that the digital transformation of Cameroonian local authorities cannot succeed without structural reform that links political leadership, financial viability, and innovation tailored to local realities.

## Keywords

Digital Transformation, ICT4D, E-Government, Local Government, Structural Barriers, Decentralization

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## 1. Introduction

The digital transformation of Cameroonian local authorities is part of a broader context of administrative modernization, where digital technology is seen as a key driver of efficiency and citizen participation. However, despite ambitious declarations and clearly stated national strategies, a significant gap remains between objectives and results. This article offers a critical analysis of the structural obstacles hindering this transformation, drawing on recent scientific literature and documented experiences.

The digital transformation of local authorities is not limited to the computerization of existing services. As Mergel, Edelmann, and Haug (2019) emphasize in their comparative study on the adoption of digital technologies in the public sector, it involves a fundamental overhaul of processes, organizational cultures, and governance models [1]. This holistic approach aligns with that of Janowski (2015), who proposes a four-stage digital maturity model for public administrations, ranging from simple digitization to complete transformation (Table 1) [2].

Bertot, Jaeger, and Grimes (2010) demonstrated that digital transformation could strengthen government transparency and citizen engagement, thereby creating a virtuous circle of institutional trust [3]. However, these theoretical advantages clash with complex contextual realities, particularly in developing countries.

**Table 1.** Janowski’s digital maturity model (2015) [2].

Step 1	Step 2	Step 3	Step 4
Digitization	Transformation	Commitment	Contextualization
Downloading documents and forms	Digitized administrative processes	Co-creation with citizens	Adaptation to local realities

Heeks (2002), in his groundbreaking analysis of the failures of e-government projects in developing countries, identifies a “design-reality gap”—a mismatch between system design and local realities [4]. This analytical framework proves particularly relevant for understanding the challenges encountered in Cameroon (Table 2). Ndou (2004) complements this perspective by emphasizing that digital transformation in Africa requires an approach tailored to specific infrastructural and socio-economic constraints [5].

**Table 2.** Of Heeks (2002) [4].

Dimension	Design	Reality
Infrastructure	Stable high-speed internet connection	Unstable connection, frequent outages
Skills	Users trained in digital skills	Low level of digital skills
Process	Formalized workflows	dominant informal practices
Culture	Openness to change	Organizational resistance and inertia

More recently, Manda and Backhouse (2016) analyzed the factors contributing to the failure of e-government initiatives in sub-Saharan Africa, highlighting the mismatch between imported models and the actual needs of local administrations [6].

Based on this observation, the article is structured around the following research questions:

- What are the structural obstacles hindering the digital transformation of Cameroonian local authorities despite the existence of political discourse and national strategies?
- How can these obstacles be interpreted in light of the theoretical frameworks of digital maturity and the design-reality gap to guide contextualized recommendations?

This article proposes an integrated analytical framework that links the identified categories of obstacles to the stages of digital maturity and the dimensions of the design-reality gap, enabling a systemic reading adapted to the Cameroonian municipal context.

## 2. Method

This study is based on a structured literature review. For example, Janowski (2015) proposes a four-stage model of digital maturity: digitization, transformation, engagement, and contextualization [2]. Heeks (2002) introduced the concept of the Design-Reality Gap, explaining that digital projects fail when the designed systems do not correspond to local institutional and social realities [4]. Other relevant works include those of Bertot *et al.* (2010), Ndou (2004), Van Dijk (2006), and Unwin (2009) [3] [5] [7] [8].

Inclusion criteria: peer-reviewed articles focusing on public administrations in developing countries; exclusion of purely technical studies without an institutional dimension.

The quantitative data mentioned are primarily sourced from the International Telecommunication Union (ITU, 2022), the Telecommunications Regulatory Agency of Cameroon (ART, 2022), and reports from the Ministry of Finance of Cameroon (2021-2022), the National Institute of Statistics of Cameroon (INS, 2022), and the World Bank (2021). Where precise municipal data are unavailable, figures are provided for illustrative purposes.

### 2.1. Analytical Framework to Integrate

Janowski's (2015) digital maturity model and to Heeks' (2002) dimensions of the design-reality gap [2] [4].

The analysis shows that Cameroonian communities remain mostly at stages 1 and 2 of digital maturity, limiting the transition towards citizen engagement and advanced contextualization.

### 2.2. Legal Reinforcement

- Republic of Cameroon (2010). Law No. 2010/012 of 21 December 2010 relating

to cybersecurity and cybercrime.

- Republic of Cameroon (2010). Law No. 2010/013 of 21 December 2010 governing electronic communications (protection of personal data).
- Republic of Cameroon (2010). Law No. 2019/024 of 24 December 2019 establishing the general code for decentralized territorial authorities.

### **2.3. Limitations of the Study**

The theoretical framework of territorial digital transformation: This research is based primarily on a structured review of international literature and secondary data. It does not rely on in-depth empirical research with a representative sample of Cameroonian local authorities.

Therefore, the findings should be interpreted as structural trends and not as exhaustive diagnoses uniformly applicable to all municipalities. The heterogeneity of communities (urban, rural, metropolitan) limits the generalizability of the results; comparative field studies would be necessary to refine the analysis.

## **3. Infrastructural and Technological Obstacles**

### **3.1. The Territorial Digital Divide**

The first obstacle to digital transformation lies in the uneven coverage of the territory by telecommunications infrastructure. Donner (2015) demonstrated that the limited availability of broadband internet is a major impediment to the adoption of digital technologies in Africa [9]. In Cameroon, according to data from the International Telecommunication Union, internet penetration rates remain low in rural areas where the majority of municipalities are located.

Cariolle and Goujon (2019) demonstrated that the quality of internet connectivity directly impacts the ability of public administrations to deploy effective digital services [10]. This finding creates a paradox: the territories that would benefit most from digital administration are precisely those that lack the necessary infrastructure.

### **3.2. Technological Obsolescence and External Dependence**

Avgerou (2008), in his analysis of technology transfers to developing countries, highlights the risks of technological dependence and the inadequacy of imported solutions [11]. Cameroonian local authorities often find themselves trapped by costly proprietary systems, without local control over the deployed technologies.

Kimaro and Nhampossa (2005) analyzed the sustainability challenges of information systems in developing countries, highlighting the crucial importance of developing local skills [12]. The absence of such skills condemns projects to structural fragility.

## **4. Financial and Budgetary Constraints**

### **4.1. The Weakness of Own Resources**

Boex and Martinez-Vazquez (2007) analyzed local government financing systems

in Africa, revealing their excessive dependence on state transfers and their limited fiscal autonomy [13]. This budgetary constraint significantly limits investment in digital technologies, which appear to be relegated to a secondary priority compared to basic needs (Table 3).

Smoke (2015) expands on this analysis by demonstrating that, without effective fiscal decentralization, African local authorities struggle to mobilize the resources necessary for their modernization [14]. Cameroon perfectly illustrates this observation, with municipalities whose operating budgets leave little room for technological innovation.

**Table 3.** Budgetary structure of local authorities.

Source of funding	Average proportion
Central government transfers	60% - 75%
Own tax revenues	15% - 25%
Other resources	10% - 15%
Shares available for digital investment	<5% of the total budget

## 4.2. Total Cost of Ownership and Durability

Weerakkody *et al.* (2011) pointed out that implementation costs represent only a fraction of the total cost of ownership of public information systems [15]. Maintenance, upgrade, and training expenses are often underestimated at the project launch (Table 4).

Gil-García and Pardo (2005) identify long-term financial viability as one of the main challenges of e-government projects, particularly relevant in a context of limited resources such as that of Cameroon [16].

**Table 4.** Total cost of ownership (TCO) of an information system.

Component	Share of the total cost (over 5 years)
Initial acquisition (hardware and software)	25% - 30%
Maintenance and technical support	30% - 35%
User training	15% - 20%
Updates and developments	15% - 20%
Indirect costs (adaptation time, productivity losses)	10% - 15%

## 5. Organizational and Institutional Obstacles

### 5.1. Resistance to Change and Administrative Culture

Orlikowski (1996) theorized that technologies only transform organizations if they are accompanied by an evolution of practices and mindsets (Table 5) [17]. Pardo and Tayi (2007) apply this perspective to the public sector, demonstrating that resistance to change is particularly strong there due to the stability of bureau-

cratic structures [18].

In the Cameroonian context, Nchise (2017) demonstrated how administrative practices inherited from the colonial era persist and hinder the adoption of new working methods [19]. Digital transformation thus encounters deeply entrenched organizational inertia.

**Table 5.** Factors of resistance to organizational change.

Resistance factor	Demonstrations
The fear of the unknown	Distrust of new technologies, preference for traditional methods
Perceived threat	The fear of losing one’s job, of seeing one’s skills devalued
Bureaucratic inertia	Rigid procedures, cumbersome hierarchies, slow decision-making
Lack of training	Feeling of incompetence in the face of digital tools
Lack of incentives	Lack of recognition for innovative players, inadequate reward system

### 5.2. The Deficit of Leadership and Strategic Vision

Cordella and Bonina (2012) demonstrated the crucial role of political leadership in the success of public sector digital transformation initiatives [20]. However, as Schuppan (2009) points out, the public sector in developing countries often suffers from a lack of change agents capable of formulating a coherent digital vision [21].

Gil-García (2012) emphasizes the need for multi-level governance and coordination among stakeholders to successfully achieve digital transformation [22]. In Cameroon, the fragmentation of initiatives and the lack of an integrated strategic framework are major obstacles.

## 6. The Skills Gap and the Issue of Human Resources

### 6.1. Mismatch between Training and Needs

Siddiquee (2008) analyzed the difficulties associated with capacity building in Asian public administrations, highlighting the importance of training programs tailored to the specific needs of the public sector [23]. This problem is even more acute in Africa.

Yusuf (2019) demonstrates that the lack of digital skills among African civil servants is a major obstacle to digital transformation (Table 6) [24]. In Cameroon, local authorities struggle to attract and retain qualified IT professionals, facing competition from the private sector.

**Table 6.** Digital skills deficit.

Skill type	Needs	Current availability
Basic technical skills	Office use, Internet, email	Average (50% - 60%)
System administration skills	Server management, networks, security	Low (10% - 20%)
Skills development	Programming, databases, integration	Very low (<5%)
Digital project management skills	Steering, coordination, evaluation	Low (10% - 15%)
Data analysis skills	Data analysis, dashboards, decision support	Very low (<5%)

## 6.2. Brain Drain and Job Insecurity in Technical Fields

Docquier and Rapoport (2012) documented the extent of the African brain drain, particularly in technical sectors [25]. Local authorities, which offer uncompetitive salaries, are especially affected by this phenomenon.

Baro and Endouware (2013) point out that the high turnover rate of qualified staff in African administrations compromises the continuity of digital projects and the capitalization of knowledge [26].

## 7. Challenges in Governance and Coordination

### 7.1. Fragmentation of Initiatives

Dawes (2009) theorized the challenges of integrating information systems in the public sector, highlighting the difficulties of coordination between different levels of government (Table 7) [27]. Luna-Reyes and Gil-García (2014) extend this analysis, demonstrating how essential yet difficult to implement inter-organizational collaboration is [28].

In Cameroon, the lack of coordination between the central government and local authorities, as well as between the municipalities themselves, leads to a proliferation of isolated and incompatible projects, compromising any systemic vision.

**Table 7.** Levels of governance of digital transformation.

Level	Role in digital transformation	Current situation in Cameroon
National	National strategy, regulatory framework, general coordination	Existing strategy, but limited implementation
Regional	Territorial coordination, pooling of resources	Near absence of regional coordination
Local (municipal)	Operational implementation, services to citizens	Scattered initiatives, limited capacities
Intermunicipal	Sharing experiences, collaborative projects	Non-existent or very embryonic

### 7.2. The Opacity of Decision-Making Processes

Bailur and Walsham (2008) analyzed how corruption and a lack of transparency undermine administrative modernization efforts in developing countries [29]. Lio, Liu, and Ou (2011) empirically demonstrate that corruption slows the adoption of information technologies in the public sector [30].

This reality is particularly widespread in Cameroonian communities, where the processes of acquiring digital technologies often lack transparency, promoting suboptimal choices guided by extra-technical considerations.

## 8. Sociocultural Challenges and Citizen Appropriation

### 8.1. The Digital Divide among Citizens

Van Dijk (2006) developed a multidimensional theory of the digital divide, which goes beyond access to include skills, uses, and tangible benefits (Table 8) [7]. War-

schauer (2003) emphasizes that digital inclusion is a social process, not simply a matter of equipment [31].

In Cameroon, Tchinda *et al.* (2018) observed a low level of digital skills among the population, particularly among the elderly and in rural areas [32]. This situation significantly limits the potential use of digital services offered by communities.

**Table 8.** The dimensions of the digital divide [7].

Dimension	Description	Situation in Cameroon
Access to equipment	Possession of equipment (computer, smartphone, internet connection)	Low penetration rate in rural areas (<20%)
Skills	Knowing how to use digital technologies	Limited digital skills, particularly among people over 50, are a problem
To use	Effective and diverse use of tools	Usage has been concentrated on social networks, with low usage for e-government
Benefits	Concrete advantages (economic opportunities, citizen participation)	Limited services, a gap between connected city dwellers and excluded rural residents

## 8.2. The Persistence of Informal Practices

Roy (2005) theorized the importance of the informal sector in African cities, a sector that largely escapes formal management systems [33]. Simone (2004) developed the concept of “people as infrastructure” to describe how, in urban Africa, informal social networks compensate for institutional failures [34].

This predominance of the informal sector constitutes a major challenge for the digitization of local public services, which requires a formalization of transactions and interactions that Cameroonian social reality does not always validate.

## 9. The Legal and Regulatory Framework

### 9.1. Gaps in the Regulatory Framework

Savoldelli, Codagnone and Misuraca (2014) highlighted the importance of a suitable legal framework to support the digital transformation of the public sector [35]. Saxena (2005) shows that the lack of legislation on data protection, electronic signatures, and digital transactions constitutes a major obstacle to e-government [36].

Although Cameroon has laws on cybersecurity and electronic transactions, their application remains limited to the level of local authorities, creating legal uncertainty that discourages innovation.

### 9.2. Administrative Complexity and Cumbersome Procedures

Hood (1991), in his analysis of new public management, highlights the tension between the flexibility necessary for innovation and bureaucratic constraints [37]. Dunleavy *et al.* (2006) develop the concept of governance in the digital age, which

requires an overhaul of administrative processes [38].

Cameroonian communities remain trapped by cumbersome administrative procedures, inherited from a bureaucratic model that is poorly compatible with the agility required by digital transformation.

## 10. Comparative Experiences and International Lessons

### 10.1. Defects in Imported Models

Walsham (2017) warns against the indiscriminate importation of Western models of digital transformation into developing countries [39]. Miscione (2007) analyzes how telemedicine projects in Ethiopia failed due to a lack of consideration for local realities [40].

Njihia and Merali (2013) propose an approach based on “institutional bricolage”—the creative adaptation of technologies to local contexts rather than their direct transposition [41]. This perspective suggests that Cameroonian communities would benefit from developing endogenous solutions rather than copying external models.

### 10.2. African Successes and Their Conditions

Choudrie and Dwivedi (2005) analyzed the success factors of e-government projects, emphasizing the importance of citizen participation and adaptation to the context (Table 9) [42]. African experiences such as M-Pesa in Kenya [43] or community multimedia centers in Mali [44] demonstrate that strong local ownership can compensate for infrastructural limitations.

Deen-Swarray, Moyo and Stork (2013) demonstrate that mobile solutions can offer alternative pathways for digital development in Africa, compensating for the lack of fixed infrastructure [45]. This avenue deserves further exploration by Cameroonian communities.

**Table 9.** Success factors for e-government projects in Africa.

Success factor	Description	African example
Strong leadership	A clear political vision and support at the highest level	Rwanda: The President’s Commitment to Digital Technologies
Contextual adaptation	Solutions adapted to local realities	Kenya: M-Pesa adapts to money transfer needs
Gradual approach	Pilot start-up, gradual expansion	Ghana: Gradual rollout of the digital tax system
Effective partnerships	Public-private collaboration, civil society	South Africa: Partnerships for Internet Access
Civic engagement	Active user participation from the design phase	Tanzania: Participatory Reporting Platforms
local capacities	Investment in training and skills	Tunisia: Regional Digital Training Centers

## 11. Towards Solutions: Strategic Recommendations

### 11.1. Adopt a Progressive and Contextual Approach

Sein *et al.* (2011) propose an “action-driven design” methodology for ICT projects

in developing countries, favoring iterative experimentation over exhaustive planning [46]. Thompson and Walsham (2010) advocate pragmatic approaches, accepting initial imperfection and gradual improvement [47].

Cameroonian communities would benefit from abandoning large technocratic projects in favor of pilot initiatives that can be evaluated and adjusted, as suggested by Heeks and Stanforth (2014) in their analysis of effective e-government strategies [48].

### 11.2. Strengthening Local Capacities and the Digital Ecosystem

Unwin (2009) emphasizes the need for holistic ICT development strategies, including education, training, and the development of a local entrepreneurial ecosystem [8]. Hellström (2008) demonstrates that well-designed public-private partnerships can accelerate digital transformation [49].

Krauss (2013) demonstrates the importance of communities of practice and the sharing of experiences between communities to foster mutual learning [50]. The creation of networks of Cameroonian digital cities could catalyze this process.

### 11.3. Rethinking Governance and Coordination

Janssen and Estevez (2013) advocate for interoperable and collaborative governance frameworks [51]. Pardo, Nam, and Burke (2012) emphasize the importance of explicit coordination structures between different levels of government [52].

Cameroon would benefit from creating a national agency dedicated to supporting territorial digital transformation, as several African countries (Rwanda, Tunisia) have successfully done, thus ensuring strategic coordination and pooling of resources (Table 10).

**Table 10.** Strategic framework for territorial digital transformation.

Strategic pillar	Priority actions	Success Indicators
Infrastructure	Improving connectivity, equipping communities, mobile solutions	Network coverage rate, average speed, shared equipment
Human capabilities	Ongoing training, targeted recruitment, talent retention	Percentage of trained staff, staff turnover rate, available skills
Governance	Multi-level coordination, dedicated agency, regulatory frameworks	Number of coordinated projects, existence of the agency, adopted texts
Funding	Dedicated budgets, partnerships, sustainable mechanisms	% of the digital budget, projects funded, long-term viability
Citizen inclusion	Digital literacy, co-design, accessibility	Service utilization rates, citizen satisfaction, inclusion of rural areas
Innovation	Pilot projects, local solutions, continuous learning	Numerous innovations tested, contextualized solutions deployed

## 12. Conclusions

The analysis of structural obstacles to the digital transformation of Cameroonian

local authorities reveals a complex interplay of technical, economic, organizational, social, and political factors. As many authors have demonstrated, digital transformation cannot be decreed; it requires favorable conditions that are rarely met in the current Cameroonian context.

However, international experience, including in Africa, shows that progress is possible through pragmatic and tailored approaches rooted in local realities. The key lies less in importing sophisticated technological solutions than in patiently building a supportive ecosystem: basic infrastructure, local skills, appropriate legal frameworks, visionary leadership, and citizen ownership.

**Table 11.** Summary of structural blockages.

Blocking category	Main obstacles	Impact on digital transformation
Infrastructure	Uneven coverage, obsolescence, technological dependence	Technical impossibility of deploying digital services
Financial	Limited resources, dependence on government transfers, underestimation of the total cost of ownership	Projects not financially viable, chronic underinvestment
Organizational	Resistance to change, inertia, lack of leadership	Cultural and institutional blockage, aborted initiatives
Skills	Training shortages, brain drain, high staff turnover	Inability to maintain and upgrade systems
Governance	Fragmentation of initiatives, opacity of decisions, lack of coordination	Incompatible projects, waste, lack of a coherent vision
Sociocultural	Digital divide among citizens, informal practices, low appropriation	Unused services, imbalance between supply and demand
Legal	Gaps in the regulatory framework, complex procedures, legal uncertainty	Obstacles to innovation, uncontrolled legal risks

The challenge for Cameroon is to move from a logic of large, one-off projects to a systemic and sustainable strategy that prioritizes gradual implementation and values local initiatives (Table 11). As Heeks (2003) suggests, this implies “think big, but start small”—a maxim particularly relevant to Cameroonian local communities [53].

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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