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Challenges of Implementing Digital Governance in Bangladesh: A Case Study of Dhaka North City Corporation

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ABSTRACT

This study investigates the challenges of implementing digital governance in Bangladesh with a specific focus on Dhaka North City Corporation (DNCC). While the 'Digital Bangladesh' initiative has made notable progress at the national level, local institutions such as DNCC continue to struggle with bureaucratic inertia, infrastructural constraints, limited digital literacy, political interference, and fragmented accountability. Using a qualitative case study approach, the research draws on interviews, focus group discussions, and policy reviews to identify key institutional, technological, and socio-political barriers. The findings reveal that despite multiple reforms, DNCC's digital systems remain poorly integrated, underutilized, and often inaccessible to marginalized groups. Theoretically, the study applies the Technology Acceptance Model (TAM), Institutional Theory, and the Design-Reality Gap to highlight the misalignment between design and practice. The research underscores the urgent need for inclusive, citizen-centric, and well-coordinated digital strategies to ensure effective urban governance in Bangladesh.

INTRODUCTION

Digital governance, commonly known as e-governance, has become a transformative paradigm for modernizing public-sector administration worldwide. It entails the strategic application of digital tools, particularly Information and Communication Technologies (ICTs), to improve the delivery, accessibility, transparency, and accountability of government operations (Asker Guenduez, 2022). More than a shift from analog to digital, digital governance represents a reconfiguration of institutional processes, an expansion of participatory decision-making mechanisms, and a deepening of the relationship between the state and its citizens through networked systems and real-time data management. In the Global South, and South Asia in particular, integrating digital technology into governance systems is increasingly considered an urgent developmental strategy (“Digital-Governance-and-Rights-in-South-Asia-and-the-Path-Forward,” 2025). With rapidly expanding urban populations and rising citizen expectations, local and national administrations are under pressure to provide timely, efficient, and equitable services. Within this framework, the Government of Bangladesh launched the “Digital Bangladesh” initiative in 2009 to facilitate digital transformation across multiple sectors, including education, health, public administration, and local governance, with the broader goal of achieving a knowledge-driven economy by 2040 (Young, 2019). Programs such as the Access to Information (a2i) initiative have been instrumental in this transition by enabling digital inclusion and streamlining access to citizen services. National-level progress includes implementing biometric ID systems, digital land management services, e-filing platforms, and mobile financial technologies. These developments have contributed to improved administrative responsiveness and broader service outreach in both urban and rural settings (Sarker and Rahman, 2025). However, replicating these gains at the local government level remains a major challenge. Urban governing bodies, such as City Corporations, despite being key players in municipal service delivery, often face systemic obstacles to adopting and institutionalizing digital governance (Hasan et al., 2023). Such challenges include infrastructural shortcomings, human resource deficits, fragmented digital ecosystems, and resistance to administrative change.

Being predominantly an agrarian country, rural and agricultural development received priority in public allocations and management attention in the past. At the same time, it has to be recognized that in spite of a declared national policy in favour of rural and agricultural development, ultimately much of the investments might have flowed back to urban areas. The country's economy, which had nearly collapsed during the liberation war of Bangladesh, later saw its dependence on external aid increase due to repeated devastating natural disasters and other anti-growth factors. At this critical juncture, in the beginning of the twenty-first century, the Dhaka North City Corporation (DNCC), which was established in 2011 following the division of the former Dhaka City Corporation, plays a central role in providing services to approximately five million city residents (Chronological Development of DNCC). These services range from waste disposal and infrastructure upkeep to issuing trade licenses, collecting property taxes, and processing public complaints. DNCC has initiated several digital governance reforms,

including online tax payment portals and mobile apps. Although several initiatives have been introduced, their impact has been inconsistent. Digital platforms remain underutilized, technologically constrained, and often inaccessible to disadvantaged groups. Yet, the scope for progress is considerable. Addressing these limitations could improve institutional efficiency and narrow the digital divide, ultimately fostering more inclusive and effective governance. Most of DNCC's digital initiatives continue to reflect a top-down approach, with little input from end users or marginalized communities (Young, 2019). Adoption is further constrained by barriers such as limited digital literacy, the lack of multilingual features, and socio-cultural skepticism toward technology. In addition, challenges within the institution—including weak coordination, overlapping mandates, and insufficient IT infrastructure—further undermine implementation. These structural, technological, and socio-political obstacles call for urgent attention and a more nuanced examination.

RESEARCH QUESTIONS, OBJECTIVES, METHOD, AND FOCUS

This research, employing a qualitative case study approach, seeks to address that gap. It explores the barriers hindering DNCC's digital governance initiatives and offers insights that could inform meaningful reforms. By gathering perspectives from both institutional actors and service recipients, the study critically evaluates the design, accessibility, and performance of existing digital platforms—aiming to spark engagement and inspire change.

The research is guided by two primary questions:

1. What are the key challenges DNCC faces in executing digital governance initiatives?
2. How do these challenges affect the accessibility, transparency, and efficiency of municipal public services?

The relevance of this study lies in its micro-level focus and its attempt to bridge the divide between digital policy rhetoric and real-world practice. By focusing on DNCC, one of the most institutionally complex city corporations in Bangladesh, this research provides critical insights into the practical dynamics of urban digital governance. It contributes to scholarly literature by employing institutional and technology adoption theories in a Global South urban context and offers empirically grounded policy recommendations for reforming and scaling digital governance mechanisms in Dhaka and beyond. This study employs a qualitative case study methodology to examine the institutional, socio-technical, and operational challenges affecting the implementation of digital governance initiatives within the Dhaka North City Corporation (DNCC). The methodological framework aligns with South Asian qualitative traditions and ensures consistency with the research objectives and literature review by systematically collecting and analyzing data through interviews, focus group discussions, document analysis, and policy review. The study is underpinned by the theoretical lenses of Institutional Theory, the Technology Acceptance Model (TAM), and the Design-Reality Gap framework.

LITERATURE REVIEW

Digital governance involves the deployment of digital technologies, especially ICTs, to reform administrative operations, enhance public service delivery, and improve participatory mechanisms between the state and its citizens. It encompasses e-services, digital accountability systems, open data portals, and citizen engagement platforms. Heeks (2002) distinguishes between user-facing “front office” applications, such as mobile portals and citizen dashboards, and “back office” systems, such as databases and workflow automation tools, which together form the full digital governance architecture. Castells (2009) conceptualizes digital governance as a networked form of decision-making that leverages information flow for greater public accountability. Schedler (2022) emphasizes that digital governance success requires not only technical infrastructure but also institutional leadership, adaptive bureaucracy, and capacity-building at multiple levels. Importantly, digital governance differs from digital government. The latter focuses solely on digital tools within government agencies, while the former implies systemic changes in governance logic. Dunleavy et al. (2006) link digital governance to the “digital era governance” model, characterized by the integration of services, customized citizen engagement, and the complete digitization of administrative processes (Ciborra and Navarra, 2005). The theoretical underpinnings of digital governance are based on ideas from political science, information systems, and public administration. They highlight the use of technology to improve openness, accountability, and citizen engagement in government processes. Key ideas, including e-governance, network governance, and digital democracy, describe how digital technologies alter power relations and decision-making procedures (Milakovich, M.E., 2012). These foundations also incorporate socio-technical systems theory, emphasizing the interplay of people, policies, and technology. Overall, they provide an intellectual foundation for understanding how digital technologies change governance institutions and public service delivery.

Globally, cities like Tallinn, Seoul, and Barcelona exemplify best practices in smart governance. Seoul’s digital consultation tools and participatory budgeting systems enhance civic participation, while Estonia’s e-ID and blockchain-based registries streamline service access. These experiences show that political will, interdepartmental alignment, and public trust are crucial success factors (Nam and Pardo, 2011). In South Asia, digital governance has expanded rapidly, though outcomes vary widely. India’s “Digital India” program has made major strides in digitizing public service delivery but has also been criticized for exclusionary practices tied to biometric errors and weak feedback systems (Paul, 2007). Sri Lanka and Nepal have established e-portals, yet both struggle with sustainability and user adoption. These regional cases underscore the importance of localized, needs-sensitive design and implementation. Other South Asian countries have made substantial progress in digital governance with projects such as Bangladesh’s Digital Bangladesh and Pakistan’s e-government reforms. These projects aim to improve service delivery, prevent corruption, and increase citizen access to government services using online platforms. Despite progress, obstacles such as the digital divide, inadequate infrastructure, and varying degrees of digital literacy persist

across the area. Overall, South Asia's experience demonstrates both the potential and the challenges of implementing digital governance in developing countries.

While digital governance is often lauded for its efficiency and transparency benefits, critical scholars warn against uncritical adoption of technology-centric approaches. Kitchin (2015) critiques “technological solutionism,” where ICTs are used as catch-all remedies for complex governance issues. Structural inequities, based on class, gender, or geography, can be exacerbated by digital platforms if inclusivity is not prioritized. Luque-Ayala and Marvin (2016) describe “splintering urbanism,” where digital infrastructure reinforces urban inequality. Limited internet access or device availability can marginalize low-income groups, older adults, and informal workers. Ethical concerns such as surveillance, data protection, and algorithmic discrimination further complicate the landscape. Critical viewpoints on digital governance stress that, while technology can increase efficiency and transparency, it can also exacerbate inequities and monitoring (Lindquist, E.A. and Huse, I., 2017). Adopting digital governance necessitates a balanced strategy that prioritises diversity, ethics, and accountability with innovation.

DISCUSSION AND RESULTS

Dhaka North City Corporation (DNCC) Overview

City Corporations or Municipalities were first introduced by the British in the mid-19th century in South Asia as local self-governments. The idea behind the evolution of such self-governments was not only to raise funds for local development but also to bring local people into the country's governance system, since their participation in the governing body was almost insignificant in those days. This led to a very complex situation, as it was not easy to raise the necessary revenue for civic development without hurting the feelings of locals left out of the governance process, which also had political consequences. Thus, to forestall future political grievances and the paucity of funds, the British government introduced this local government system to raise revenue for local development works and to involve some representatives of the people in learning the art of governance. Consequently, from the 19th century onwards, the British government across South Asia introduced several local government acts to establish municipalities, corporations, district boards, etc. Thus, in 1864, a municipal law was passed, which led to the establishment of the Dhaka municipality on 1 August 1864.

The primary functions of the municipality were thought to be the maintenance of the town, the police and roads, conservation, control of offensive trends, the arrangement of vaccinations, and the maintenance of hospitals in the locality. This was a unique feature of the history of Dhaka city, as this was the first time the citizens were lawfully involved in the city's welfare according to their own ideas & visions. However, it was not a powerful body at the beginning. Initially, the municipality was established by government-imposed law, and its functionaries were also appointed by the government in the case of Dhaka city. The Magistrate was the ex-official chairman of the municipality. Also, most of the members were nominated by the government. However, within a short time, the people objected to this system & demanded a true representation of the citizens

on the municipal boards. The local self-government Resolution of Lord Ripon of 1882, also known as the 'Magna Carta' of local self-government in India, was the first major step towards the democratic development of municipalities, which involved native people managing their own local affairs. It led to the Bengal Municipal Act of 1884, which introduced the elective system for municipal representatives for the first time, turning the city of Dhaka into a truly people's body.

In the post-colonial phase (that begins with the Pakistan period), Dhaka became the provincial capital of the then East Bengal from 1947. The Dhaka Municipal Committee was superseded by the Government. The reason for supersession was attributed to inefficiencies in tax collection and developmental activities. The term of supersession was extended by annual orders on account of the non-preparation of electoral rolls. The elected Chairman took office, and the Municipality was superseded under Pakistan's military regime.

The Municipal Administration Ordinance of 1960 repealed all previous municipal laws and provided that the chairman would be an official member appointed by the government and would hold office at the government's pleasure, in an effort to bring the entity under the umbrella of Pakistani President Ayub Khan's 'Basic Democracy'. The commissioners elected one of their members as Vice-Chairman. Dhaka became the capital of Bangladesh with the country's independence in 1971. After independence, the urban local bodies, operating as a legacy of the past, were formally dissolved, and official administrators were appointed to each of them under the President's Order. The Dhaka municipality was elevated to a City Corporation under the laws of Parliament. In 1978, Dhaka Municipality was granted corporation status, and the existing Chairman became the Corporation's Mayor. The municipal corporation was superseded at the beginning of the 1980s. The Order proclaims, "The Corporation shall be a body corporate, having perpetual succession and a common seal, with powers, subject to the provisions of this Ordinance and the rules, to acquire, hold, and dispose of property, both movable and immovable, and shall by the said name sue and be sued."

An elected Commissioner was chosen as the Mayor, and three of the elected Commissioners were to serve as the Deputy Mayors of the Corporation. The Mayor and the Deputy Mayors were deemed to be the Commissioners of the Corporation. The term of office of the commissioners was five years. Under the same ordinance, Dhaka City Corporation was made an autonomous body, but the government reserved the right to intervene in its affairs in several ways. Moreover, the government appointed the Chief Executive Officer of the Corporation under such terms and conditions as it determined.

Although the Ordinance raised the status of the local government, the functions and financial powers of the newly created Dhaka City Corporation remained largely the same as under the Pourashava system. Its functions included public health, water supply and drainage, matters related to food and drink, animals, construction and maintenance of roads, street lighting, street watering, public safety, maintenance of parks, gardens, and forests, education, culture, social welfare, and general development of the city. In addition, the City Corporation could perform any functions delegated to it by the government. Conversely, any functions or institutions run by the Corporation could be

transferred to the government's management or control. The Corporation was given a wide range of fund-raising powers, including the levying of rates, cesses, tolls, fees, rents, and profits from the Corporation's own properties, contributions from individuals, and grants from the government.

The structure of the Dhaka City Corporation, as set up by the government under the 1983 Ordinance, remained in place for some time, but in 1990, the post of the Mayor was given to the Divisional Commissioner ex officio. Later on, the government appointed a non-official as Mayor. Though the government appointed the Mayor, the Deputy Mayors were elected by the elected commissioners. Gradually, the population in the capital was increasing rapidly, and so was urbanization. At the very outset of the free market economy, they created a free economy in the country. As a result, there were more job opportunities and more economic sectors introduced in the capital due to the country's centralized government. The major changes which it made were in the composition of the corporation authority. The Corporation then consisted of a Mayor and such numbers of Commissioners as might be fixed by the Government from time to time. It was further laid down that the Mayor and the Commissioners should be elected by direct election on the basis of adult franchise in accordance with the provisions of the Act and the rules made thereunder. It was further enacted that there should be such a number of seats as might be fixed by the government exclusively for women commissioners in the Corporation, as reserved seats, who should be elected by the Mayor and Commissioners in such manner as might be prescribed. Another important change that it made was the division of the city into several zones. It was enacted that 'For the purpose of better administration and proper conduct of business of the Corporation, the Government may, divide the city into such number of zones as it may deem fit'. There should be a zonal office for every zone, which would perform such functions as may be assigned to it by the Corporation, under the supervision and control of the Mayor.

From the beginning of the 21st century, the expansion of Dhaka City continued unabatedly, so much so that it soon came to be called a 'Mega City' with more than 10 million people, due to the uncontrolled, haphazard growth of the city. Moreover, as the administrative machinery within the city was of various kinds and under various authorities, the city almost became unmanageable, resulting in poor quality of civic services and the suffering of the people. One solution to this problem was dividing the city into two parts to lessen the burden on a single Mayor. This idea captured the imagination of many political leaders and administrators, and in 2011 the city was divided into the North and the South. Thus, in November 2011, the Dhaka North City Corporation came into existence. The core responsibilities of DNCC include: Urban planning and infrastructure development, Waste management and sanitation, Traffic management and street maintenance, Health and sanitation services, Licensing and taxation (e.g., trade license, holding tax), Slum improvement and poverty alleviation programs, Community services such as parks, playgrounds, and cemeteries. DNCC's administrative structure is a testament to its democratic roots. DNCC is organized into multiple zones and wards, each administered by an elected Ward Councillor. At the leadership level, the corporation is headed by a Mayor elected directly by citizens and supported by female Councillors

elected from reserved seats. Its administrative functions are further strengthened by a professional staff body, including bureaucrats deputed from the Ministry of Local Government, Rural Development, and Cooperatives (LGRD). Despite persistent challenges—ranging from bureaucratic inefficiencies, corruption, and weak inter-departmental coordination to financial constraints and limited citizen participation—DNCC has demonstrated notable resilience and adaptability. In response to these systemic issues, the corporation has progressively embraced digital technologies to streamline operations, improve transparency, and enhance the accessibility of governance services for its residents.

Digital Governance: Empirical Evidence From The Global South

In developing countries, empirical studies show varying degrees of success in digital governance. In Uganda, donor-funded e-government systems collapsed due to lack of local ownership and poor ICT infrastructure (Regan, 2012). Civil society-led digital mapping in the Philippines demonstrated how participatory governance tools can directly influence urban policy. These examples highlight the importance of community involvement, inter-agency collaboration, and long-term funding.

In India, platforms in Pune and Bangalore accelerated service response times but failed to integrate back-end systems, resulting in inconsistent outcomes. In Pakistan, digital initiatives were hampered by bureaucratic silos and limited oversight (Luna-Reyes, 2017). These experiences reveal the pivotal role of context-specific strategies, adaptive institutions, and user-centered design.

Rwanda's e-health services are a prime example of digital governance designed to improve healthcare access and efficiency. Citizens may access health information, schedule appointments, and get remote consultations using platforms such as Irembo and telemedicine programs. These programs break down barriers for remote regions by linking patients with healthcare providers via digital platforms (Emmanuel, G., 2010). Overall, Rwanda's e-health system demonstrates how digital governance can improve public service delivery while promoting equitable development.

The Nairobi eCitizen portal is a digital platform that centralizes access to essential government and municipal services. It enables residents to apply and pay for services, including business permits, land rates, driver's licenses, and passport applications online (GITAU, J.K., 2016). By removing the requirement for in-person visits, the portal has reduced bureaucratic delays and the risk of corruption. It has also increased transparency, efficiency, and convenience for residents by ensuring services are always available from any location with an internet connection. Overall, the eCitizen site has increased public trust in digital government while improving service delivery in Nairobi.

Contemporary administrative reforms aimed at improving public service delivery, strengthening transparency, and fostering citizen participation increasingly emphasize integrating digital governance into urban municipalities. Central to this transformation is the “Digital Bangladesh” vision, which underscores the strategic use of information and communication technologies (ICTs) to build a more effective, accountable, and inclusive public administration. Within this national framework, municipal authorities—

particularly those in large metropolitan centers such as Dhaka—have emerged as key drivers of digital reforms. The present study focuses on the Dhaka North City Corporation (DNCC), one of Bangladesh's most prominent urban local bodies, examining its history, institutional structure, operational mechanisms, and digital governance initiatives to enhance service delivery and citizen engagement.

Bangladesh's "Digital Bangladesh" plan, launched in 2009, has set the country on a path toward a fully digital government. This vision seeks to integrate information and communication technology (ICT) with government services, therefore increasing accessibility, transparency, and efficiency. Key components include the e-Government Master Plan, which focuses on human resource development, citizen connection, digital government infrastructure, and ICT industry promotion. The development of Aspire to Innovate (a2i), a government initiative that promotes public sector innovation and citizen-centered digital transformation, is a crucial step forward in this change. a2i, with the support of the ICT and Cabinet Divisions, has played an invaluable role in improving service delivery across multiple sectors.

The Bangladesh National Web Portal was the country's first move towards digital transformation. It was created as part of the "Digital Bangladesh" goal and is the country's largest government information gateway, linking over 45,000 government departments through a single platform. It gives individuals convenient access to a variety of services, including birth registration, exam results, property records, state forms, and contact information for authorities, thereby promoting greater openness and accountability. The portal reduces bureaucratic delays and travel expenses for citizens by centralizing information, enabling government services to be delivered more quickly and efficiently (Siddiquee, N.A., 2016). Overall, the National Web Portal has enhanced Bangladeshi governance by making public services more accessible and enhancing citizen-government engagement.

Union Digital Centres (UDCs) in Bangladesh, established under the government's a2i plan, are one-stop service hubs located in each Union Parishad to provide crucial digital and government services to rural residents. These facilities, run by both male and female entrepreneurs, offer a variety of services, including birth and death registration, property deeds, e-government form submissions, mobile banking, computer training, agricultural guidance, visa processing, and even telemedicine (Islam, M.A., 2018). Over the years, UDCs have provided millions of services, saving residents time and money and enabling thousands of local businesses, particularly women, to create jobs. However, many UDCs are currently facing issues such as outdated technology, unstable internet connectivity, a lack of governmental support, and competition from commercial service providers, all of which jeopardise their long-term viability.

Sobar Dhaka, a citizen engagement app developed by Dhaka North City Corporation, was released in January 2021 to streamline public service delivery by allowing residents to report local issues such as road damage, mosquito infestation, garbage, streetlight outages, drainage problems, and illegal structures directly to municipal authorities, complete with photos and GPS location. In the first six months, consumers reported 4,292 concerns, of which the firm effectively fixed 3,951

(approximately 93%), demonstrating good responsiveness across several categories. Aside from issue reporting, Sobar Dhaka offers emergency services, interactive features like "Ajker Dhaka" for daily event updates, and "Nearby Services" to direct users to hospitals, pharmacies, bus stations, and other venues. The Mayor has committed to prompt, ongoing action, pledging to address app-reported concerns within 24 hours, underscoring DNCC's commitment to citizen-centric governance.

Bangladesh's a2i programme has digitized thousands of services and established digital centers nationwide. While Bangladesh has made notable progress at the national level, translating these reforms into effective urban governance—particularly within the Dhaka North City Corporation (DNCC)—remains fraught with challenges. Al-Hossienie and Barua (2013); Islam et al., (2025) point to financial constraints, skill shortages, and infrastructural bottlenecks as critical obstacles. Similarly, Alam (2007) emphasize the role of political patronage and bureaucratic inertia in undermining system performance.

Islam et al. (2025) further argue that poorly designed platforms, combined with limited citizen participation, have significantly reduced the utility of DNCC's digital tools. Nonetheless, DNCC has introduced several noteworthy innovations, including GIS-based mapping, online tax payment systems, and mobile applications for tracking waste management.

Despite these initiatives, long-standing issues such as weak platform integration, inadequate monitoring mechanisms, and the absence of effective feedback loops continue to hinder progress. As Shammi et al. (2023) and Karmaker et al. (2023) observe, Dhaka's broader smart city aspirations remain fragmented, often constrained by inconsistent planning processes and an overreliance on donor-driven funding.

Digital Governance Initiatives in DNCC

The Sheikh Hasina government, which assumed power in 2009, adopted a national policy to digitize the country. In this connection, DNCC was also digitized. The "Digital Bangladesh" agenda inspired a range of initiatives within the DNCC to leverage ICTs and strengthen governance, and to improve service outcomes within the broader framework of the Government of Bangladesh. These initiatives can be broadly categorized into four domains: service delivery platforms, administrative digitalization, citizen engagement technologies, and smart city infrastructure.

Online Service Delivery Platforms

The Dhaka North City Corporation (DNCC) has made notable advancements in expanding public service delivery through digital platforms. A prime example is the online trade license system, which allows businesses to apply for, renew, and pay for licenses electronically, eliminating the need for in-person visits to DNCC offices. By significantly reducing processing times, this initiative not only enhances operational efficiency but also minimizes opportunities for petty corruption (Young, 2019), earning positive responses from the business community.

Another major innovation is the digital holding tax system, which enables citizens to calculate and pay their taxes online via mobile financial services or bank transfers.

Integrated with GIS mapping technology, this system ensures greater accuracy and transparency in tax assessments, thereby fostering public trust and confidence in municipal financial management.

In addition, DNCC has introduced an e-Complaint mechanism, designed to operate with transparency and accountability. Through the DNCC website or mobile application, residents can report issues such as waste disposal, drainage, or street lighting. Complaints are automatically routed to the appropriate department, while citizens receive regular updates on their status. This system has created an effective feedback loop, strengthening communication between residents and the city administration and improving responsiveness in service delivery.

Digital Administrative Reforms

Dhaka The Dhaka North City Corporation (DNCC) has adopted a range of ICT-driven solutions to modernize its internal operations and enhance organizational efficiency.

1. **Enterprise Resource Planning (ERP):** DNCC has introduced ERP software to automate and digitize core administrative functions, including human resource management, payroll, and inventory control. This initiative has streamlined routine tasks, strengthened interdepartmental coordination, and improved overall institutional efficiency.
2. **GIS-Based Urban Planning:** Geographic Information System (GIS) tools have become central to managing Dhaka's rapid urbanization. They support strategic land-use planning, road network design, and the optimization of public service delivery. For a city facing the challenges of unplanned development, these tools provide a structured and sustainable approach to urban management, enabling DNCC to plan growth more effectively.
3. **Document Management and E-Filing:** To boost administrative productivity, DNCC has implemented advanced document management systems and electronic filing processes. These innovations reduce reliance on paperwork, accelerate decision-making, and enhance transparency. By saving time and improving efficiency, they make governance more responsive and convenient for both administrators and stakeholders.

Citizen Engagement and Transparency Tools

Citizen engagement and transparency are central pillars of digital governance, and the Dhaka North City Corporation (DNCC) has taken significant steps to strengthen these dimensions by adopting innovative digital tools. The official DNCC website (<https://dncc.gov.bd>) serves as a comprehensive information hub, providing citizens with easy access to official notices, budget reports, ward-level updates, and tender announcements. By consolidating such information in a single platform, DNCC ensures that residents remain well-informed about municipal activities and decisions.

In addition, DNCC actively utilizes social media platforms, particularly Facebook, to disseminate updates, collect citizen feedback, and respond to inquiries. Regular live sessions conducted by the Mayor and senior officials create a direct channel of communication, allowing public concerns to be addressed in real time and fostering a culture of trust through open dialogue.

Another major innovation is the Smart Citizen App, developed in collaboration with the Access to Information (a2i) program. This integrated platform enables residents to access multiple services, including tax payments, complaint submissions, and reporting issues such as broken street lights, while also providing a space to offer suggestions for service improvement.

Collectively, these initiatives represent a transformative shift in governance. By promoting inclusivity, facilitating real-time communication, and increasing administrative transparency, they have strengthened civic engagement and made the DNCC more responsive to its citizens' needs.

Smart City and Infrastructure Initiatives

The Dhaka North City Corporation (DNCC) has undertaken notable initiatives in smart city planning by integrating ICT into infrastructure management and environmental services. These efforts are designed to enhance urban efficiency, promote sustainability, and align with global practices in innovative governance.

1. **Smart Street Lighting:** Using centralized software, DNCC has introduced intelligent street lights that reduce energy consumption and enable remote diagnostics. This not only improves energy efficiency but also enables quicker maintenance responses.
2. **Modernized Waste Management:** Waste collection vehicles equipped with Global Positioning System (GPS) and mobile applications enable real-time monitoring of service routes. This ensures timely collection, improves service reliability, and helps identify underserved or neglected areas, thereby guaranteeing more equitable coverage across the city.
3. **Digital Billboards and Information Screens:** Installed at major intersections, these screens act as real-time communication tools, displaying traffic updates, public notices, and environmental alerts. Their role in fostering transparency and citizen awareness has been particularly significant.

Although many of these projects are still in their initial stages, they represent DNCC's strong commitment to building a smarter, more connected city. This forward-looking approach demonstrates a clear dedication to innovation, sustainability, and citizen-centered urban governance.

Challenges Faced

Despite significant advancements, the Dhaka North City Corporation (DNCC) continues to face substantial challenges in expanding and sustaining its digital governance initiatives. Addressing these barriers requires active engagement from both institutional stakeholders and citizens to ensure a more strategic, inclusive, and adaptive approach. Several key issues remain pressing:

Infrastructure limitations: Unstable internet connectivity in certain areas limits real-time access to digital services, while inadequate system maintenance leads to frequent downtime. In addition, the absence of reliable, integrated databases contributes to data inconsistencies and delays in service delivery.

Human resource constraints: Many staff members lack the technical expertise or training required to operate modern digital systems effectively. Institutional support for continuous capacity development and digital literacy among employees is also limited.

The digital divide: A large portion of the population—particularly older adults, low-income groups, and residents of informal settlements—either lacks access to digital devices or the skills to use them, thereby undermining the inclusivity of service delivery.

Institutional resistance to change: Traditional administrative practices and bureaucratic inertia, both within government systems and among citizens, often slow the adoption and integration of new digital technologies.

Data security and privacy concerns: DNCC's limited capacity to address cybersecurity threats raises vulnerabilities around data protection, privacy, and the potential misuse of sensitive information.

These challenges highlight the need for a holistic approach to digital governance—one that combines technological innovation with institutional reform, citizen-centric service design, and strong stakeholder participation. Strategies such as regular staff training, targeted digital literacy programs for underserved communities, and robust cybersecurity measures will be essential to overcoming these barriers and advancing DNCC's digital transformation agenda.

THEMATIC OVERVIEW AND FINDINGS

Thematic Overview

1. To Institutional resistance and capacity gaps: The persistence of outdated workflows, limited structured training, and resistance to digital transition remain significant barriers to effective implementation.
2. Infrastructure and maintenance challenges: Reliable internet connectivity, timely system maintenance, and the prevention of frequent breakdowns—particularly in certain wards—are critical for sustaining the momentum of digital transformation.
3. User proficiency and system design: Citizen adoption depends heavily on digital literacy, the availability of user support services, and the development of intuitive, user-friendly interfaces.
4. Equity and political influence: Unequal distribution of digital tools and politically motivated implementation priorities undermine the inclusivity and fairness of governance initiatives.

5. Policy alignment and planning: A disconnect between national strategies and local execution, coupled with short-term and ad hoc planning, limits the effectiveness of long-term digital transformation efforts.
6. Accountability and feedback mechanisms: Robust systems for complaint resolution, progress tracking, and administrative responsiveness are essential for building trust and ensuring continuous improvement in digital governance.

Summary of the key thematic findings

These themes highlight that, while DNCC has made progress in advancing digital governance, its framework remains constrained by underlying structural and design shortcomings. The challenges identified are interrelated, collectively intensifying the broader limitations of digital service delivery. Achieving a meaningful digital transformation, therefore, requires a holistic and integrated approach that addresses all dimensions of governance. Such an approach should prioritize strengthening technological infrastructure, expanding training opportunities, ensuring political impartiality in implementation, and designing inclusive, user-friendly platforms that meet the diverse needs of citizens.

CONCLUSION

The empirical findings of this study demonstrate a strong alignment with the theoretical frameworks employed—namely the Technology Acceptance Model (TAM), Institutional Theory, and the Design–Reality Gap. This convergence not only underscores the research's methodological rigor but also reinforces the credibility of its conclusions. The Technology Acceptance Model (TAM), which identifies perceived ease of use and perceived usefulness as central determinants of system adoption, is particularly useful in explaining the challenges surrounding DNCC's digital platforms. User dissatisfaction—especially regarding technical malfunctions, poor reliability, and complex interfaces—reflects the absence of ease of use, a critical TAM dimension. Many residents expressed frustration with the Smart Citizen App and similar tools, describing them as cumbersome and prone to frequent errors. As Davis (1989) emphasizes, when a system is perceived as difficult or unreliable, potential benefits are overshadowed by usability concerns, leading to low adoption. The reluctance of DNCC residents to fully engage with these platforms clearly illustrates this principle. Institutional Theory offers valuable insights into the organizational resistance encountered within DNCC. Consistent with DiMaggio & Powell's (1983) argument that public institutions often resist technological change due to entrenched practices and cultural norms, the findings reveal widespread bureaucratic inertia. Many officials continue to rely on traditional, manual methods even when digital alternatives are available. This resistance is further compounded by political interference in the allocation and implementation of digital services, a finding that aligns with Gil-Garcia's (2012) observation that institutional commitment and transparency are critical to successful digital transformation. The Design–Reality Gap framework further explains the disconnect between DNCC's digital platforms and the conditions under which they are deployed. Technological deficiencies, poor infrastructure, and limited digital literacy

highlight a clear mismatch between design intentions and operational realities. As Suchman (2002) argues, digital systems must be developed with a nuanced understanding of real-world constraints, including unreliable internet access and low user capacity. DNCC's failure to integrate these considerations into system design has resulted in dissatisfaction, low engagement, and underutilization of its platforms. Taken together, the findings provide strong support for the three theoretical lenses applied. TAM explains the low adoption rates of DNCC's platforms due to usability and reliability issues (Davis, 1989). Institutional Theory highlights bureaucratic resistance and political interference as barriers to reform (DiMaggio & Powell, 1983). Finally, the Design–Reality Gap framework illustrates the mismatch between system design and user realities, which undermines the effectiveness of digital services (Suchman, 2002). Collectively, these theories offer a comprehensive understanding of the technological, behavioral, and institutional barriers that continue to constrain DNCC's digital transformation.



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