

## **A CASE STUDY ON BUS STOP INFRASTRUCTURE AND OPERATIONAL EFFICACY: THE DHAKA NAGAR PARIBAHAN GREEN CLUSTER PILOT**

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### **ABSTRACT**

Reliable and coherent public transportation is essential for sustainable urban growth. In Dhaka, Bangladesh, a severe transportation issue, marked by persistent congestion and a perilous, disjointed bus system, has prompted many governmental initiatives. The Bus Route Rationalization (BRR) program is paramount, seeking to amalgamate numerous competing private operators into a systematic, corporate franchise framework. The Dhaka Nagar Paribahan (DNP), initiated in 2021, functions as the essential pilot project for this BRR policy. This article provides a thorough, factual assessment of the DNP's "Green Cluster" (Routes 21-28) by integrating eight primary-source inspection reports from the Dhaka Transport Coordination Authority (DTCA). The process entails consolidating stop-by-stop field data to assess the physical and operational condition of every authorized bus stop infrastructure. The results indicate a significant disparity between policy aspirations and actual conditions on the ground. A quantitative investigation of 400 authorized bus stations across eight routes revealed that 41.3% (165 stops) were classified as "Proposed," indicating their non-existence in physical form. Merely 20% (80 stops) were completely functional with the required e-ticketing counterman and Point of Sale (POS) apparatus. The remaining infrastructure was deemed structurally unsound, abandoned, or operationally inoperative due to systematic governance failings, including unlawful vendor occupation and widespread illegal parking, which obstructs access to bus bays. The study contends that the widely publicized stagnation of the DNP pilot by 2024-2025 resulted not just from recorded political and operational resistance but also from a fundamental, unresolved failure to establish and manage the essential physical infrastructure necessary for its operation. The disparity between elevated technology aspirations and inadequate administration is seen as the principal obstacle to substantial public transport reform in Dhaka.

**Keywords:** *Dhaka Nagar Paribahan, Bus Route Rationalization (BRR), Urban Transport, Bus Stop Infrastructure, Implementation Gap, Case Study*

## **1. INTRODUCTION: THE CRISIS OF PUBLIC TRANSPORT IN DHAKA**

An effective, affordable, and integrated public transport system is a prerequisite for sustaining a functional standard of life in a modern metropolis. It provides the essential mobility that connects inhabitants to employment, education, healthcare, and social activities. Unfortunately, for the residents of Dhaka, Bangladesh, the public transport system functions as the direct antithesis to this goal. The city's transport network is characterized by endemic gridlock, a disorganized and poorly regulated bus service, and severe inadequacies in road infrastructure (Alam et al., 2020). The implications of this failure are grave. The daily commute is not only uncomfortable; it is a debilitating ordeal for millions. This systemic failing has thus prompted a logical yet unsustainable transition away from public transit. The principal catalyst for the swift and alarming increase of privately-owned vehicles, especially cars and motorbikes, is the "lack of effective public transport" (Alam et al., 2020). This has established a detrimental cycle: the lack of dependable mass transit compels many to utilize private vehicles, hence intensifying the congestion that renders mass transit impractical. In reaction to this situation, the Government of Bangladesh has prioritized a key policy intervention: the Bus Route Rationalization (BRR) effort.

This policy is designed to address the root cause of the bus system's chaos by consolidating the fragmented, competing private operators into a franchise-based system of streamlined, color-coded routes (Asjad, 2024; Hossain, 2024). The Dhaka Nagar Paribahan (DNP) service, launched in late 2021, represents the first, critical pilot implementation of this long-awaited BRR policy (Hossain, 2024). This paper provides a comprehensive, ground-truth evaluation of the DNP pilot project. It focuses specifically on the "Green Cluster" (Routes 21-28) originating from Ghatarchar, which served as the initial test case for the DNP (Hossain, 2024). The paper's objective is to conduct a detailed analysis of the physical and operational status of the bus stop infrastructure designated for these routes. While high-level policy and political factors are often cited for the project's difficulties, this paper argues that the success or failure of such a reform is determined at the most fundamental level: the ability of the state to provide, maintain, and govern the basic physical infrastructure of a bus stop. By synthesizing primary field data from official inspection reports, this case study identifies a profound implementation gap between policy ambition and ground-level reality, highlighting this gap as the critical, and often overlooked, point of failure.

## **2. THE HISTORICAL CONTEXT AND POLICY EVOLUTION OF DHAKA'S BUS SYSTEM**

### **2.1 From Para-Transit Dominance to Motorization**

To understand the critical nature of the Bus Route Rationalization (BRR) initiative, one must first analyze the historical vacuum it was designed to fill. Dhaka's 20th-century growth was not managed by high-capacity mass transit. Instead, the city's transport needs were historically met by non-motorized transport (NMT) and pedestrian mobility. As late as the 1990s, studies showed that walking accounted for over 60% of all trips in the metropolitan area. The dominant vehicular mode was the cycle-rickshaw, which proliferated from just 37 in 1941 to an estimated 500,000 by 1998 (Alam et al., 2020). This reliance on NMT defined the city's physical and operational character. However, as the city's population and economy expanded, a "fast transition" to a motorized city began. This transition was not, however, met with a parallel development of an effective, high-capacity public transport system. An urban rail system was non-existent, and the formal bus system was incapable of meeting demand. This created a critical transport vacuum, which was subsequently filled by a chaotic influx of private cars, motorcycles, and motorized para-transit (such as auto-rickshaws, or 'CNGs'), leading directly to the current crisis of congestion (Alam et al., 2020).

### **2.2 The 'Fragmented Operator' Model and Systemic Failure**

The conventional bus system that evolved to fill this vacuum is the root cause of Dhaka's transport chaos. The industry is not a unified service but a collection of "small to medium-sized bus companies". Critically, even within a single company, buses are often owned by numerous

individuals. This fragmented, individual-ownership model incentivizes a "sole intention of profit maximization" rather than service efficiency or passenger safety (Alam et al., 2020). This economic model dictates on-road behavior, resulting in "unnecessary and unwanted overlapping of routes" as operators all compete for the most profitable corridors. It also fuels the aggressive and dangerous on-road competition between drivers who race to collect passengers, stop in the middle of traffic, and disregard schedules. This behavior makes the bus service profoundly "unreliable and time consuming" (Alam et al., 2020). The service quality is so low that commuters frequently prefer to pay the higher fares of rickshaws, one of the most expensive modes of travel, just to avoid the "debilitated state" induced by the public buses.

### **2.3 Policy Intervention: The Bus Route Rationalization (BRR) Initiative**

The Bus Route Rationalization (BRR) initiative was conceived as the direct policy solution to the fragmented operator model. First proposed nearly two decades ago and officially initiated by the late Dhaka North City Corporation (DNCC) Mayor Annisul Huq around 2015, the BRR is a franchise-model solution (Asjad, 2024; Hossain, 2024). The core concept is to replace the chaotic, overlapping network with a streamlined system of 42 color-coded routes, operated by a small number of companies under a profit-sharing agreement (Asjad, 2024; Islam & Ahmed, 2024). This model, in theory, removes the incentive for on-road competition and allows for centralized planning, scheduling, and quality control. After years of delays, the initiative was revived, and the Dhaka Nagar Paribahan (DNP) service was launched on December 26, 2021, as the first practical, on-the-ground pilot of the BRR policy (The Business Standard, 2021). The initial test case for this city-wide reform was the "Green Cluster," a series of routes (including 21, 22, 23, 24, 25, 26, 27, and 28) originating from the Ghatarchar terminal (DTCA, 2024; Hossain, 2024). Therefore, the performance of this Green Cluster serves as a critical case study for the viability of the entire BRR strategy.

## **3. BUS STOP INFRASTRUCTURE: POLICY, PROJECTS, AND TICKETING**

### **3.1 Institutional Framework for Infrastructure**

The development of a functioning bus stop network in Dhaka is hampered by a fragmented institutional framework. The Dhaka Transport Coordination Authority (DTCA) was founded as the main coordinating agency for transport planning and policy; nevertheless, the implementation of infrastructure projects is fractured. The official inspection reports for the DNP Green Cluster routes explicitly identify this fragmentation (DTCA, 2024).

The designated "implementing agency" for bus stops along a particular route alternate between the Dhaka South City Corporation (DSCC), the Dhaka North City Corporation (DNCC), and the Roads and Highways Department (RHD). The allocation of responsibilities for construction, maintenance, and enforcement creates basic coordination difficulties, which, as demonstrated in Section 4, directly leads to the inconsistent and substandard condition of the infrastructure.

### **3.2 Technological Integration: Ticketing and Information Systems**

A key component of the DNP pilot project was the enhancement of its operating systems, especially in fare collection. This technological ambition exists on two levels: the immediate system deployed for the DNP and the long-term vision for the entire city. First is the e-ticketing system. The DNP service mandated this system from its first day of operation (The Business Standard, 2021). This system is not a smart-card or automated model; rather, it relies on a "counterman" stationed at each designated bus stop, who issues a paper ticket using a handheld Point of Sale (POS) machine (DTCA, 2024; Kabir et al., 2024). This move was intended to eliminate the arbitrary and conflict-ridden fare collection practices of the old system, a change that studies show has widespread public approval (Kabir et al., 2024). However, the viability of this model is entirely contingent on the existence of a functional, accessible, and staffed physical bus stop at every designated point. Second is the long-term technological vision. The DTCA and the government aim to emulate the highly successful, technology-driven bus system of Seoul (DTCA, 2023). This ambition is formalized in a technical

assistance project to establish a "Dhaka Integrated Transport Management Center (DITMC)" and a "Bus Information & Management System (BIMS)" (DTCA, 2023). A key component of this future-facing project is the "Bus Stop Equipment" activity, which proposes a budget of \$1.41 million for the installation of 100 high-tech Bus Information Terminals (BITs) at 50 bus stops (DTCA, 2023). This creates the central analytical tension of this paper. While policymakers are actively planning for a multi-million-dollar, real-time passenger information network (BITs), the primary field data from the DNP pilot project reveals a system currently incapable of maintaining a simple concrete shelter, staffing a ticket counter, or preventing a vegetable market from occupying a designated bus stop (DTCA, 2024; DTCA, 2023).

#### **4. ANALYSIS OF PRESENT SITUATION: A CASE STUDY OF DNP GREEN CLUSTER ROUTES**

##### **4.1 Methodology**

This section's results are based on a thorough synthesis and analysis of eight official "Inspection Reports" issued by the Dhaka Transport Coordination Authority (DTCA). These reports provide a comprehensive status update for each stop within the DNP Green Cluster, encompassing Route 21, Route 22, Route 26, Route 28, Route 23, Route 24, Route 25, and Route 27 (DTCA, 2024). This analysis identifies systemic trends in physical infrastructure provision, operational functionality, and inherent governance deficiencies by consolidating data from the summary lists and qualitative descriptions of all 400 allowed stops throughout these eight routes.

##### **4.2 Physical Infrastructure Deficit: The 'Paper Stops' Phenomenon**

A primary finding from the inspection reports is that a large percentage of the DNP's "designated" bus stops do not physically exist. Across all eight routes, the summary tables consistently list numerous stops with the status "Proposed." This indicates that the DNP service was launched on a route network where the most basic infrastructure had not yet been built. Even where physical infrastructure does exist, it is often unusable. The reports are replete with consistent, recurring descriptions of failure (DTCA, 2024):

**Damaged or Unfit:** Many existing shelters are described as "abandoned" (DTCA, 2024), "dilapidated" (DTCA, 2024), or in a state where the "physical infrastructure is unusable" (DTCA, 2024). At Kamalapur, for instance, a shelter is noted as "severely damaged and unusable" (DTCA, 2024).

**Obstructed:** A recurring example is the stop at Washpur (South). The inspection reports for no fewer than seven of the eight routes note that the passenger shelter is "unused" because "broken furniture is piled up" directly in front of it (DTCA, 2024).

**Illegally Occupied:** The failure of governance is starkly visible. The Mohammadpur Bus Stand (South) shelter is explicitly noted as being "occupied by a vegetable market" and consequently not in use (DTCA, 2024). The general observations across all reports also cite widespread occupation by illegal shops, food stalls, and political banners (DTCA, 2024).

This evidence demonstrates that the DNP service was not rolled out onto an operationally-ready network. It was launched on a "paper route" where many stops were merely conceptual, and many existing ones were unfit for use.

##### **4.3 Operational & Ticketing Efficacy**

The DNP's operational and financial structure is based on the e-ticketing paradigm, which needs a counterperson with a POS terminal at each stop. The data from the field demonstrates that this system is just as incomplete and unstable as the physical infrastructure it relies on. The operational status of the stops shows a lottery of service (DTCA, 2024):

**Fully Functional:** Certain stops, such as Ghatarchar (North), are reported to be fully operational, indicating that "the shelter, ticket counter configuration, and attendant (equipped with a POS machine) are all appropriately positioned" (DTCA, 2024).

**Completely Non-Functional:** Numerous stops are designated as "not operational," accompanied by the explicit note "no ticket counter or attendant" (DTCA, 2024).

**Ad-Hoc Operations:** In the absence of a functional infrastructure, the system must rely on temporary, improvised measures. At the important Shahbag interchange, where shelters were either damaged or removed to facilitate the metro, counter personnel are required to operate from "temporary counters (umbrella)" on the footbridge (DTCA, 2024). The attendant at the Boshila CNG Stand (North) has vacated the designated shelter, which is nonfunctional, and established an unapproved temporary counter in an alternate location (DTCA, 2024).

**Operational Unreliability:** The "General Observations" section of the reports identifies a significant flaw in the service: counter personnel take "operational breaks" during off-peak hours (for instance, from 1:00 PM to 3:00 PM), resulting in a complete cessation of ticketing services at that location (DTCA, 2024).

The compulsory e-ticketing "system" is, in fact, not a system but rather a compilation of inconsistent, unreliable, and provisional initiatives that do not deliver the reliable, high-quality service assured by the DNP model.

#### 4.4 Systemic Governance Failure: Encroachment and Misuse

The "General Observations" section, included in all eight inspection reports, provides the most critical insight. The primary point of failure is not merely a lack of construction or maintenance, but a complete breakdown in governance and enforcement (DTCA, 2024).

**Illegal Parking:** The observation that is most often stated is "illegal parking." CNGs, rickshaws, private automobiles, and even other buses parked illegally make it impossible to get to designated bus stops and bus bays. The DNP's own buses are known to park just in front of the passenger shelter at the Ghatarchar (North) terminus, blocking it (DTCA, 2024). Not keeping bus bays clear is a serious offense that puts passengers in danger and makes the congestion that the BRR was supposed to fix worse. DNP buses have to stop in the midst of active traffic lanes.

**Illegal Occupation:** As noted previously, the stops are chronically occupied by "illegal shops, political banners, floating vendors" (DTCA, 2024).

This systemic failure to maintain the "bus stop" as a sovereign space dedicated exclusively to public transport demonstrates an abdication of enforcement by the relevant authorities. This institutional failure is a more significant barrier to success than any technological or financial deficit. The aggregate data from the eight reports is summarized in Table 1. The figures reveal the scale of the implementation failure: 41.3% of the stops planned for the pilot project do not physically exist, and only 20% are fully operational as designed.

Table 1: Aggregate Analysis of Bus Stop Infrastructure and Operational Status (DNP Green Cluster Routes 21-28)

Route No.	Total Designated Stops	Physically Constructed	"Proposed" (Non-Existent)	Fully Operational (Counter + POS)
Route 21 (DTCA, 2024)	54	34 (63.0%)	20 (37.0%)	17 (31.5%)
Route 22 (DTCA, 2024)	45	29 (64.4%)	16 (35.6%)	13 (28.9%)
Route 26 (DTCA, 2024)	33	22 (66.7%)	11 (33.3%)	8 (24.2%)
Route 28 (DTCA, 2024)	57	39 (68.4%)	18 (31.6%)	12 (21.1%)
Route 23 (DTCA, 2024)	67	44 (65.7%)	23 (34.3%)	12 (17.9%)
Route 24 (DTCA, 2024)	49	27 (55.1%)	22 (44.9%)	6 (12.2%)
Route 25 (DTCA, 2024)	46	17 (37.0%)	29 (63.0%)	8 (17.4%)
Route 27 (DTCA, 2024)	49	23 (46.9%)	26 (53.1%)	4 (8.2%)
<b>TOTAL</b>	<b>400</b>	<b>235 (58.8%)</b>	<b>165 (41.3%)</b>	<b>80 (20.0%)</b>

Source: Synthesized from the summary tables of the eight DTCA Inspection Reports (DTCA, 2024).

## 5. DISCUSSION: BRIDGING THE GAP BETWEEN POLICY AND REALITY

### 5.1 The DNP Pilot Project Status (2024-2025)

The detailed, foundational failures outlined in Section 4 offer essential background for comprehending the overarching course of the project. By 2024, the DNP pilot project, initiated with considerable political support in 2021, was broadly recognized as having stagnated (Asjad, 2024; Hossain, 2024). A report from November 2024 indicated that the DNP service had been "suspended" (Asjad, 2024). The definitive failure was codified in September 2025, when the Planning Commission officially rejected a request to extend the overarching "bus route rationalization (BRR)" technical project. The explicit reason cited for the rejection was "poor progress." After five years, the project's physical progress was reported at only 30%, and its financial progress was 19% (Sultana, 2025). The findings of this paper provide the empirical evidence *behind* these numbers. The "30% physical progress" cited in reports (Sultana, 2025) is not an abstract figure; it is the on-the-ground reality of dilapidated shelters, illegally occupied bus bays, and the 41.3% of "proposed" stops (Table 1) that were never built. The field-level data from the eight inspection reports (DTCA, 2024) is a direct catalog of the "poor progress" that led to the project's official shelving.

### 5.2 Multi-Causal Failure: Infrastructure vs. Politics

The mainstream perspective on the DNP's failure has predominantly emphasized political and operational pushback. Reports suggest "political interference" (Asjad, 2024) and a "lack of cooperation" from influential private bus owners' syndicates, which profit from the prevailing disorder (Asjad, 2024; Islam & Ahmed, 2024). This paper contends that this story, although accurate, is insufficient. The inspection reports (DTCA, 2024) indicate a concurrent and disastrous failure of the state to fulfill its obligations in the public-private partnership. The DNP model mandated private operators to invest in new buses and comply with a revised financial framework, while the public sector was tasked with supplying and regulating the infrastructure (stops, terminals, and enforcement). The evidence indicates that the public sector did not succeed in this regard. This created a causal feedback loop of failure:

- The DTCA and City Corporations failed to deliver a network of functional, clear, and enforced bus stops.
- This infrastructure failure made efficient operations impossible, forcing DNP buses to stop in traffic and preventing the e-ticketing system from functioning reliably.
- This operational chaos and lack of state-provided infrastructure gave resistant private operators (Islam & Ahmed, 2024) and political "rent seekers" (Asjad, 2024) the operational justification and political cover to defy the new system, which ultimately collapsed.

The failure was not simply political resistance; it was a dual failure of political will *and* fundamental state competence.

## 6. THE PATH FORWARD: RECOMMENDATIONS FOR A VIABLE BUS SYSTEM

### 6.1 Immediate Infrastructure and Operational Mandates

The path to reviving the DNP or any future BRR project does not begin with high-level policy, but with addressing the immediate, ground-level failures. The "General Recommendations" sections, repeated across all eight official inspection reports (DTCA, 2024), offer a clear, consensus-based action plan from the government's own inspectors. Key mandates include (DTCA, 2024):

**Enforcement of Infrastructure:** The top priority is enforcement. All reports recommend that "All illegal parking in front of shelters must be removed." It is further recommended that "Exemplary punishment can be arranged" for violators (DTCA, 2024).

**Construction and Maintenance:** "Construction of the Ghatarchar bus terminal should begin immediately" (DTCA, 2024). All "proposed" stops must be constructed, and all "unnecessary materials," such as the broken furniture at Washpur, must be removed (DTCA, 2024).

**Operational Standardization:** To fix the e-ticketing system, "Proper ticket counters with shelters should be established at every stop." Furthermore, "Specific shifts and schedules for counter men must be set and implemented" to eliminate the ad-hoc operational breaks (DTCA, 2024).

## 7. LONG-TERM STRATEGIC PLANNING: INTEGRATION AND TECHNOLOGY

Despite the pilot's stalling, the government is attempting to "revive" the BRR initiative as of late 2024, with a renewed push to bring operators under the DNP umbrella (Asjad, 2024; Islam & Ahmed, 2024). The long-term strategy, as outlined in the JICA-backed Revised Strategic Transport Plan (RSTP), is a "stepwise bus route network development" (JICA, 2015). The most significant shift in this future plan is the integration of the bus system with the new Mass Rapid Transit (MRT), or Metro Rail, lines. In this new ecosystem, buses have transitioned from being the principal mode of long-distance travel to serving as an essential "feeder service" (Hossain, 2024; JICA, 2015). The bus system's new function is to provide "last mile delivery," linking residential and commercial areas to high-capacity MRT stations (Hossain, 2024). This interconnected future is significantly dependent on the technology aspirations of the DITMC and BIMS initiatives to deliver centralized management and real-time passenger information (DTCA, 2023). The success of this advanced, integrated vision is wholly dependent on addressing the basic enforcement and governance issues outlined in this paper.

## 8. CONCLUSION

This case study of the Dhaka Nagar Paribahan (DNP) Green Cluster illustrates a project characterized by a significant implementation gap. The DNP, an essential pilot for the Bus Route Rationalization (BRR) strategy, was initiated on a "ghost" infrastructure of "paper stops." Primary data from eight official DTCA inspection reports indicates that the project was operationally unfeasible from its outset. A quantitative examination revealed that 41.3% of the 400 designated bus stops on the experimental routes were nonexistent (DTCA, 2024). Merely 20% of stops were entirely functional with the required e-ticketing technology. The predominant portion of the current infrastructure is deemed unusable owing to disrepair, unlawful occupation by vendors, or a total governance failure to mitigate illegal parking, hence rendering the stations inaccessible to buses. The study asserts that the cessation of the DNP pilot by 2025 (Asjad, 2024; Sultana, 2025) resulted from multiple contributing factors. The political pushback from incumbent operators was a crucial element, worsened by the state's fundamental failure to provide, maintain, and—most critically—enforce the integrity of its public transport system. The future of transport reform in Dhaka, reliant on the integration of a high-tech bus network as a feeder system for the planned Metro Rail (Hossain, 2024; JICA, 2015), is uncertain. Without the state's ability to effectively rectify the fundamental governance deficiencies outlined in the "General Recommendations" in this report (DTCA, 2024), all advanced policies, technology aspirations, and future integration strategies are likely to be unsuccessful.

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## DECLARATION

The authors confirm that no Artificial Intelligence (AI) or AI-assisted technologies were used in the research process, data analysis, or the preparation of this manuscript. All content presented in this work is the original product of the authors' own research and writing.

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