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## Digital Public Finance Management in Bihar: Opportunities for Efficiency and Inclusion

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### ABSTRACT

Digital Public Finance Management (DPFM) has emerged as a transformative tool for improving fiscal governance in developing economies. Bihar, one of India's most socio-economically challenged states, has undertaken multiple digital reforms to enhance transparency, streamline financial processes, and expand inclusion for marginalized groups. This paper examines the evolution, current status, and future possibilities of DPFM in Bihar. It analyses key initiatives such as the Treasury Computerization Project (COMPACT), e-Kuber integration, online bill processing, Public Financial Management System (PFMS), Direct Benefit Transfer (DBT), and e-procurement platforms. The paper argues that while Bihar has made substantial progress, persistent challenges—such as digital literacy gaps, connectivity barriers, and administrative inertia—limit the full realization of digital finance governance. It concludes by proposing a strategic roadmap for leveraging digital innovations to achieve higher fiscal efficiency, accountability, and social inclusion.

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### 1. Introduction

Public Finance Management (PFM) is the backbone of state governance, determining how public resources are mobilized, allocated, and utilized. The digitalization of PFM—conceptualized as Digital Public Finance Management (DPFM)—has gained prominence across developing nations for its ability



to reduce leakages, improve real-time monitoring, and strengthen citizen-centric service delivery. Bihar, historically marked by weak administrative capacity and high poverty levels, presents a compelling case for analyzing the potential and constraints of DPFM reforms.

Since 2005, Bihar has pursued several governance reforms aimed at modernizing financial administration. Digital interventions have been central to this effort, particularly in treasury management, welfare disbursement, taxation, and procurement. These innovations promise to transform Bihar's fiscal ecosystem by enhancing transparency and operational efficiency, while also expanding access for disadvantaged groups through digital inclusion mechanisms.

This paper critically evaluates the landscape of DPFM in Bihar, identifying achievements, systemic constraints, and pathways for deeper reform.

## 2. Conceptual Framework: Digital Public Finance Management

Digital Public Finance Management can be understood as the integration of digital technologies into the core domains of public finance, including revenue administration, budgeting, treasury operations, procurement, and welfare delivery. Global studies show that digital PFM systems significantly reduce corruption, improve expenditure tracking, and promote fiscal discipline.

DPFM consists of key pillars:

- **Digital Treasury Systems:** enabling real-time fund management, bill processing, and expenditure reporting.
- **Digital Payments & DBT:** ensuring fast, transparent, and targeted transfer of benefits.
- **e-Procurement:** enhancing competitiveness, reducing human discretion, and minimizing procurement losses.
- **Data Analytics for Fiscal Governance:** enabling predictive modeling, fraud detection, and evidence-based budgeting.
- **Digital Inclusion:** ensuring equitable access through digital literacy programs and low-cost technologies.

These frameworks guide the analysis of Bihar's DPFM journey.

## 3. Evolution of Digital Public Finance Reforms in Bihar



Bihar's journey toward digital public finance management has unfolded steadily over the past two decades, beginning with early treasury computerisation efforts. Through systems such as COMPACT and e-Lekha—introduced in line with national reforms—the state was able to shift away from manual bill processing and adopt electronic workflows. These platforms improved the preparation and clearance of bills, enabled real-time treasury reporting, and made reconciliation with the Accountant General far more efficient. As a result, departments gained better visibility into their allocations and spending patterns, reducing administrative delays and strengthening financial oversight.

A major leap forward came with the integration of Bihar's treasury network into the Reserve Bank of India's e-Kuber platform. This reform introduced real-time settlement of government transactions, allowing the state to manage its liquidity position with greater precision. It also reduced the inefficiencies associated with payment float and improved cash-flow forecasting. Parallel to this, Bihar adopted the Public Financial Management System (PFMS), which has become central to monitoring scheme expenditures and enabling direct benefit transfers. PFMS has enhanced the transparency of multi-tiered fund flows, facilitated real-time expenditure tracking, and helped remove duplicate or ineligible beneficiaries from scheme databases.

The state's DBT architecture has expanded rapidly, supported by Aadhaar-linked authentication and the integration of bank accounts. This has improved the targeting of welfare transfers in schemes related to pensions, student scholarships, and food subsidies, ensuring that benefits reach eligible households more reliably. Similarly, Bihar's shift to mandatory e-procurement for major departments has transformed the public contracting landscape. It has broadened vendor participation, reduced chances of cartelisation, and introduced a level of transparency that was difficult to achieve under manual tendering systems.

Finally, the rollout of the Goods and Services Tax Network (GSTN) brought Bihar into a unified national digital tax administration framework. Even though the state traditionally had a smaller consumption base, GSTN tools significantly improved tax compliance and provided stronger analytical capacity for identifying evasion risks. Automated return filing, invoice matching, and credit reconciliation have modernised Bihar's tax administration and contributed to a more predictable revenue environment. Collectively, these reforms have laid the foundation for a more accountable, responsive and data-driven system of public financial management.

#### **4. Opportunities Created by Digital Public Finance Management in Bihar**



Digital reforms have opened significant opportunities for enhancing transparency and reducing leakages in Bihar's public finance ecosystem. By minimising human intervention and relying on automated workflows, digital systems create verifiable audit trails that make corruption and fund diversion more difficult. One of the most visible gains has come from the expansion of Direct Benefit Transfer (DBT) systems, which have helped the state eliminate duplicate beneficiaries and reduce ghost accounts, ensuring that welfare funds reach the intended households. These changes have strengthened public trust in government systems and improved the overall efficiency of resource use.

Alongside better transparency, digital tools have made financial administration faster, smoother and more reliable. Treasury digitalisation has shortened bill-processing times, reduced manual errors, and improved cash-flow management. Departments now have access to real-time dashboards that allow them to monitor spending patterns and ensure compliance with budget limits. This level of visibility is particularly important for a resource-constrained state like Bihar, where efficient expenditure management directly supports fiscal discipline. Digital systems also reduce administrative burdens on frontline staff, freeing up time for programme implementation rather than paperwork.

Another major benefit of digital public finance systems is their contribution to social inclusion. Direct benefit transfers have enabled timely payments to millions of beneficiaries while reducing reliance on intermediaries. This is especially empowering for women, elderly persons, Dalits and rural poor, who often face barriers in accessing cash-based welfare delivery systems. With transfers routed directly into bank accounts, beneficiaries gain not only financial support but also a sense of autonomy and dignity. Improved targeting, backed by digital verification, further helps ensure that social spending reaches those who need it most.

Digitalisation has also strengthened the state's capacity for evidence-based policymaking. Integrated platforms—such as the Public Financial Management System (PFMS), GSTN databases, and digital treasury systems—generate a rich pool of real-time data. Policymakers can use these insights to identify potential revenue leakages, model future expenditure needs, and refine the design of welfare schemes. This marks a shift from reactive fiscal management to proactive and data-informed decision-making, improving both efficiency and long-term planning.

Finally, digital technologies have helped Bihar widen its tax base and enhance compliance. Tools such as e-way bills, automated matching of invoices, and data-mining algorithms have strengthened enforcement in sectors where evasion was historically high. At the same time, e-procurement platforms have transformed public works by reducing procurement cycle times, increasing vendor participation, and



lowering project costs. These improvements enhance value-for-money in infrastructure spending and contribute to stronger, more credible public financial management across the state.

## 5. Challenges to Digital Public Finance Management in Bihar

### 5.1 Digital Divide

The digital divide remains one of the biggest structural barriers to the effective implementation of Digital Public Finance Management (DPFM) in Bihar. Despite substantial progress in expanding telecommunication networks, Bihar continues to exhibit some of the lowest digital adoption indicators in India. According to the *National Family Health Survey (NFHS-5)*, only **33% of women** and **58% of men** in Bihar report being able to use a smartphone, reflecting a significant gender-based digital literacy gap. Smartphone penetration itself remains uneven, with rural households—constituting nearly **89%** of Bihar's population—experiencing limited access to affordable digital devices. This restricted access directly affects their ability to engage with digital platforms used for Direct Benefit Transfer (DBT), digital grievance redressal, and online financial services. For many beneficiaries, especially elderly persons, Dalits, and marginalized rural communities, navigating digital interfaces such as PFMS-linked bank accounts or Aadhaar-enabled payment systems becomes challenging without adequate digital literacy support.

Connectivity constraints further deepen this divide. According to the *Telecom Regulatory Authority of India (TRAI) 2023 reports*, Bihar's internet subscription rate stands well below the national average, with rural broadband penetration lagging by almost **20 percentage points**. Frequent network disruptions, low-speed connections, and inadequate 4G coverage in remote districts such as Jamui, Araria, and West Champaran hinder real-time financial transactions and digital authentication required under DBT and treasury systems. These connectivity gaps also impede government officials at block and panchayat levels from efficiently using digital treasury software, e-procurement platforms, and digital monitoring dashboards. Consequently, the state's push toward automation and online financial governance risks excluding the very groups it aims to empower. Unless complemented by targeted investments in rural digital infrastructure, last-mile connectivity, and digital literacy campaigns, Bihar's transition to a fully digital public finance ecosystem will remain uneven and incomplete.

### 5.2 Administrative Capacity Constraints

Administrative capacity constraints continue to impede the full-scale adoption and optimal functioning of Digital Public Finance Management (DPFM) systems in Bihar. Although the state has introduced several



digital tools—such as e-treasury platforms, PFMS dashboards, and online procurement systems—their effective utilization depends heavily on the technical competencies of government personnel at the department, district, and block levels. In many cases, officials lack adequate training in digital workflows, cyber hygiene, data management, and troubleshooting skills. A 2022 Comptroller and Auditor General (CAG) review noted that multiple departments continued to rely on manual processes or hybrid methods because staff were unfamiliar or uncomfortable with the new digital interfaces. This lack of capacity is further compounded by irregular or insufficient refresher training, leaving employees without the skills needed to adapt to rapidly evolving financial management technologies.

Resistance to change within the administrative culture also presents a significant barrier. Many officers, especially those accustomed to paper-based workflows, perceive digital systems as disruptive, time-consuming, or overly technical. This hesitation slows down digital adoption and leads to inconsistent implementation across departments. Additionally, Bihar's DPFM architecture is heavily dependent on contractual IT professionals responsible for system maintenance, troubleshooting, and user support. While these professionals play a crucial role, their contractual nature often results in high turnover, institutional memory loss, and inconsistent quality of service. Departments frequently face delays due to the absence of permanent, in-house technical teams capable of addressing software malfunctions, security issues, or system updates. As a result, the functioning of digital platforms becomes fragile, vulnerable to disruptions, and overly reliant on external vendors. Strengthening administrative capacity—through structured training programs, incentives for digital adoption, and creation of permanent IT cadres—remains essential for Bihar to realize the full potential of digital finance reforms.

### 5.3 Rural Banking Infrastructure Weakness

A strong and inclusive banking infrastructure is essential for the success of Digital Public Finance Management (DPFM), especially for Direct Benefit Transfer (DBT) programs that rely on timely and accurate disbursements. However, Bihar continues to face significant challenges in this domain. Despite improvements over the past decade, the state's **banking density—measured as the number of bank branches per 100,000 population—remains one of the lowest in India**. According to the *Reserve Bank of India (RBI) 2023 State Statistics*, Bihar has approximately **8–9 branches per 100,000 people**, compared to the national average of **15–16 branches**. This structural shortfall is particularly concerning because more than **88% of Bihar's population resides in rural areas**, where physical access to banks is severely constrained. Limited branch presence leads to overcrowding, long queues, and delayed financial transactions, especially during peak periods such as pension disbursements or agricultural subsidy



rollouts. As a result, many beneficiaries struggle to access their DBT funds on time, undermining the efficiency and credibility of digital welfare systems.

Poor ATM coverage and inadequate digital transaction infrastructure further weaken the rural financial ecosystem. Several districts—especially in north Bihar—face chronic cash shortages because of the insufficient number of ATMs and frequent machine downtimes. A study by NABARD (2022) noted that **over 40% of rural panchayats in Bihar do not have a functioning ATM within a 3–5 km radius**, forcing residents to rely on intermediaries or travel long distances for basic cash withdrawals. The lack of micro-ATMs, biometric POS machines, and agent banking networks (such as Bank Mitras) affects the reliability of Aadhaar-enabled payment systems (AePS). Even when DBT amounts are credited digitally, beneficiaries often encounter authentication failures due to poor internet connectivity or malfunctioning biometric devices. This creates frustration, leads to transaction delays, and perpetuates mistrust in digital financial services. Strengthening Bihar’s rural banking infrastructure—through increased branch expansion, investment in micro-ATMs, support for fintech solutions, and improved inter-bank coordination—is critical for ensuring that digital public finance reforms translate into effective last-mile delivery.

#### **5.4 Cybersecurity and Data Privacy Risks**

As Bihar rapidly transitions to digital platforms, concerns around cybersecurity and data protection have become increasingly important. With crores of digital transactions taking place through PFMS, DBT, Aadhaar-enabled systems, and online procurement platforms, the volume of sensitive financial and personal data has grown exponentially. India recorded over 1.4 million cyber-security incidents in 2022 alone, according to national cyber monitoring agencies, and states like Bihar are not immune to these rising threats. The risks include data breaches, manipulation of digital payment records, fraudulent withdrawals, and unauthorised access to personal information stored in government databases. Given that many welfare schemes rely on Aadhaar-linked transfers, even small vulnerabilities can expose citizens—especially the poor and elderly—to exploitation. Strengthening cyber governance is no longer optional; it requires dedicated cybersecurity cells, regular system audits, stronger encryption protocols, and training for staff to identify and mitigate evolving digital threats.

#### **5.5 Interoperability Issues**

Another significant challenge in Bihar’s digital finance landscape is the limited interoperability between various government systems. Although platforms such as the treasury software, PFMS, GSTN, e-



procurement portals, and departmental databases each perform critical functions, they do not always communicate seamlessly with one another. This lack of integration can create delays in fund reconciliation, inconsistencies in expenditure reporting, and duplication of administrative work. For example, while PFMS provides real-time expenditure visibility, some departmental records are still maintained separately, leading to mismatches in data. Interoperability challenges also hinder the creation of unified dashboards that policymakers could use for more accurate forecasting and decision-making. Overcoming these barriers will require adopting common data standards, upgrading outdated software, and building secure APIs that enable different systems to exchange information reliably.

## **5.6 Legacy Record Digitization**

A further obstacle lies in the large volume of legacy financial records that remain undigitised across many departments in Bihar. Paper-based files, some dating back several decades, are often incomplete, poorly preserved, or stored in fragmented formats, making it difficult to integrate them into modern digital workflows. This becomes a problem during audits, reconciliation of past liabilities, or verification of long-running schemes, where historical records are essential for accuracy. The absence of digitised archives also limits the state's ability to run data analytics or track long-term fiscal trends. Digitising these legacy records will require a structured, multi-year effort involving scanning, verification, metadata creation, and secure storage. Although time-consuming, this investment is crucial for ensuring that Bihar's digital public finance ecosystem rests on a complete and reliable foundation.

## **6. Case Studies of Digital Finance Reforms in Bihar**

### **6.1 DBT in Social Welfare Schemes**

Bihar's shift to Aadhaar-linked Direct Benefit Transfers in social welfare schemes has had a visible and measurable impact. In pension schemes for the elderly, widows, and persons with disabilities, the introduction of biometric authentication helped remove duplicate, deceased, or fraudulent entries from beneficiary lists. This not only ensured that payments reached the correct individuals on time but also freed up fiscal space that could be redirected toward genuine beneficiaries. The administrative burden on field officials decreased as well, since digital payments reduced manual verification and cash handling. Over time, DBT has strengthened trust in government programmes by showing that targeted reforms can improve both efficiency and fairness.

### **6.2 e-Procurement in Road Construction**



The adoption of e-procurement in the Road Construction Department represents another successful digital reform. By moving tendering processes online, Bihar significantly widened vendor participation, making bidding more competitive and reducing the likelihood of cartel formation. Departments reported noticeable reductions in project costs as well as improvements in the quality of bids submitted. Greater transparency also helped streamline project timelines, as disputes and litigation—often triggered by opaque manual processes—declined. This shift has contributed to smoother project execution and better value-for-money outcomes in one of the state’s most crucial infrastructure sectors.

### **6.3 PFMS for Centrally Sponsored Schemes**

The use of the Public Financial Management System (PFMS) has transformed the administration of centrally sponsored schemes such as the Mid-Day Meal programme and PM-KISAN. Real-time tracking of expenditures enabled the state to identify bottlenecks quickly and ensure that funds moved through different administrative levels without unnecessary delays. PFMS dashboards allowed district and block officials to monitor utilisation closely, reducing the likelihood of unspent balances accumulating at lower levels. As a result, beneficiaries—including students, farmers, and vulnerable households—received entitlements more reliably, and the state achieved greater accountability in managing central funds.

## **7. Policy Recommendations for Strengthening DPFM in Bihar**

### **7.1 Bridging the Digital Divide**

For Bihar to fully reap the benefits of digital public finance, the foundational issue of unequal digital access must be addressed. Rural areas continue to face patchy broadband coverage, low smartphone penetration, and limited access to reliable digital services. Expanding rural broadband networks and improving last-mile connectivity would ensure that citizens, local officials, and frontline workers are able to participate meaningfully in digital systems. Alongside infrastructure, digital literacy programmes are essential so that people—especially women, elderly citizens, and marginalised groups—feel confident using digital platforms for payments and accessing welfare services. Community digital service centres, staffed with trained personnel, can act as accessible support hubs in districts and blocks, helping bridge the gap between citizens and the state’s increasingly digital governance ecosystem.

### **7.2 Capacity Building in Departments**

Strengthening the digital capabilities of government departments is equally crucial. Many officials still rely on outdated or manual processes, which limits the effectiveness of modern financial systems.



Continuous IT training, tailored to the needs of different cadres, can equip staff with the skills needed to use digital tools confidently. Appointing dedicated digital officers within key departments would help sustain reforms, troubleshoot technical issues, and coordinate with the state's IT agencies. Reducing overdependence on outsourced IT manpower is also important, as in-house capacity ensures continuity, institutional memory, and long-term resilience of digital systems. A stronger administrative workforce will ultimately improve the quality and reliability of Bihar's fiscal management.

### **7.3 Strengthening Cybersecurity Frameworks**

As digital transactions and online platforms expand, Bihar must prioritise robust cybersecurity safeguards. The state would benefit from a comprehensive cybersecurity policy that clearly outlines responsibilities, reporting structures, and security standards for all departments. Regular vulnerability assessments and penetration testing can help identify weaknesses before they are exploited. Establishing strict data protection protocols—not only for citizens' personal information but also for sensitive financial data—will reinforce public trust. Training government personnel to recognise phishing attempts, data breaches, and suspicious digital activity is equally essential. A secure digital environment is the foundation on which Bihar's digital public finance architecture must rest.

### **7.4 Integrating Digital Systems**

To maximise efficiency, Bihar must move toward seamless integration of its diverse digital finance systems. Currently, platforms such as the treasury, PFMS, GSTN, e-procurement, and DBT operate in parallel, often with limited interoperability. Creating a unified Public Financial Management dashboard that brings these systems together would give decision-makers a real-time, comprehensive view of revenues, expenditures, fund flows, and procurement activities. Such integration would improve coordination between departments, reduce duplication of work, and allow policymakers to identify bottlenecks early. Real-time analytics can also support quicker, evidence-based decisions during budget execution.

### **7.5 Strengthening Banking and Payment Infrastructure**

Digital finance cannot flourish without a strong banking and payments backbone. Many rural pockets of Bihar continue to face limited access to bank branches, ATMs, and reliable digital payment options. Encouraging banks to expand their presence in underserved districts and increasing ATM and micro-ATM penetration would greatly enhance financial inclusion. Partnering with fintech companies can help deliver innovative remote payment solutions, enabling citizens to receive benefits or make transactions



even in areas with limited connectivity. A robust payment ecosystem ensures that digital public finance reforms translate into real improvements in everyday financial access for citizens.

### **7.6 Data-Driven Budgeting**

Finally, Bihar stands to gain significantly from incorporating advanced data analytics into its budgeting and fiscal management processes. Predictive analytics can improve revenue forecasting by identifying emerging economic patterns and potential tax buoyancy. Similarly, modelling welfare expenditures using demographic and utilisation trends can help departments plan more accurately and ensure sufficient funding for priority schemes. Integrating outcome-based budgeting practices would allow the state to link financial allocations to measurable results, promoting accountability and more efficient use of public resources. A shift toward data-driven decision-making can transform Bihar's budget process into a modern, transparent, and performance-oriented system.

### **8. Conclusion**

Digital Public Finance Management has created a powerful opportunity to reshape how Bihar governs its finances and delivers public services. The state's steady adoption of digital treasury platforms, PFMS, DBT systems, GSTN integration, and e-procurement signals a clear commitment to modernising its fiscal architecture. These reforms have helped reduce leakages, made transactions more transparent, and ensured that benefits reach citizens—especially the most vulnerable—more directly and reliably. In many ways, digitalisation has begun to bridge long-standing gaps in accountability and efficiency, enabling a smoother flow of funds and a more responsive public finance system.

Yet the road ahead requires sustained attention to several structural challenges. Many rural households still struggle with digital literacy, banking access remains uneven across districts, and cybersecurity risks are growing as more financial transactions shift online. Administrative capacity also varies significantly across departments, which can slow the pace and impact of digital reforms. Overcoming these hurdles will demand a comprehensive digital finance strategy that invests in people, infrastructure, and institutional strengthening. If Bihar continues to build on the foundations laid so far—deepening system integration, enhancing staff capabilities, and designing citizen-friendly digital platforms—it has the potential to emerge as a national leader in digital public finance innovation. This future vision rests on consistent political will, thoughtful policy design, and the belief that technology can expand both efficiency and equity in governance.



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