India's Digital Transformation: Building Inclusive Infrastructure through DPI

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I. Background and Context

India is undergoing a remarkable digital transformation, one that is distinct both in its pace and structure compared to advanced economies. At the core of this transformation is the development of Digital Public Infrastructure (DPI)—a government-led initiative aimed at building foundational digital systems that enable inclusive access to essential services. Unlike the market-driven models common in high-income countries, India's approach is state-driven. It uses digital tools to tackle structural development challenges and to promote broader economic and social inclusion

The government of India has positioned DPI as the backbone of its national digitalization strategy, most notably through its flagship initiative, Digital India, launched in 2015. This strategy seeks to expand broadband connectivity, improve digital literacy, enhance public service delivery, and foster innovation in both public and private sectors.

Central to this effort is the India Stack, a set of open, interoperable digital platforms that includes Aadhaar, a biometric-based digital ID system, Unified Payments Interface (UPI), a real-time digital payment system, and DigiLocker, a secure digital document repository. These platforms have enabled seamless integration between citizens, the state, and the financial system—forming a public digital infrastructure that is accessible, scalable, and affordable. As of 2024, nearly all Indians have been registered under Aadhaar, making it one of the largest digital ID systems in the world. UPI has also seen widespread adoption, accounting for over 75 percent of all retail transactions in India. This rapid uptake demonstrates the foundational role of DPI in enabling

secure identity verification, digital payments, and efficient access to public services.

II. Transformative Impacts on Financial Inclusion and Governance

The impacts of DPI on financial inclusion have been particularly transformative. Through initiatives such as the Pradhan Mantri Jan Dhan Yojana (PMJDY), the government has enabled hundreds of millions of individuals—many of whom previously lacked access to formal banking—to open zero-balance accounts using Aadhaar-based authentication.
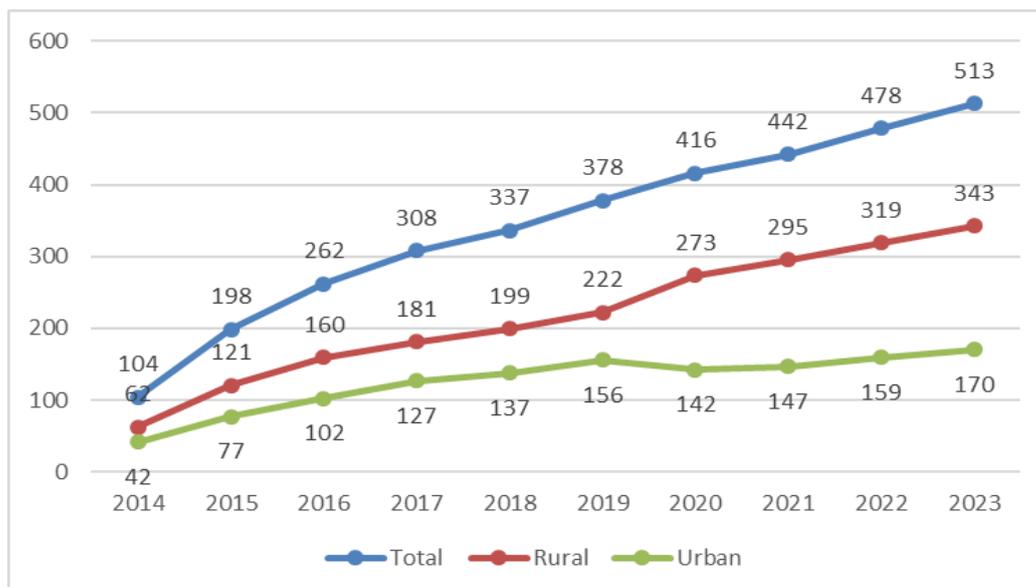
As illustrated in the graph below, the number of PMJDY beneficiaries has grown steadily since the program's launch in 2014. The total number of accounts surged from approximately 104 million in 2014 to over 513 million

by 2023. While both rural and urban areas experienced consistent growth, the increase in rural account holders has been particularly significant, reflecting the program's effectiveness in reaching financially underserved populations. This trend underscores how DPI-backed initiatives like PMJDY have helped close financial access gaps between urban and rural India, laying the groundwork for more inclusive digital financial participation.

These accounts, once linked to government welfare programs through the Direct Benefit Transfer (DBT) system, allow for timely and transparent disbursement of subsidies, reducing leakages and improving targeting efficiency.
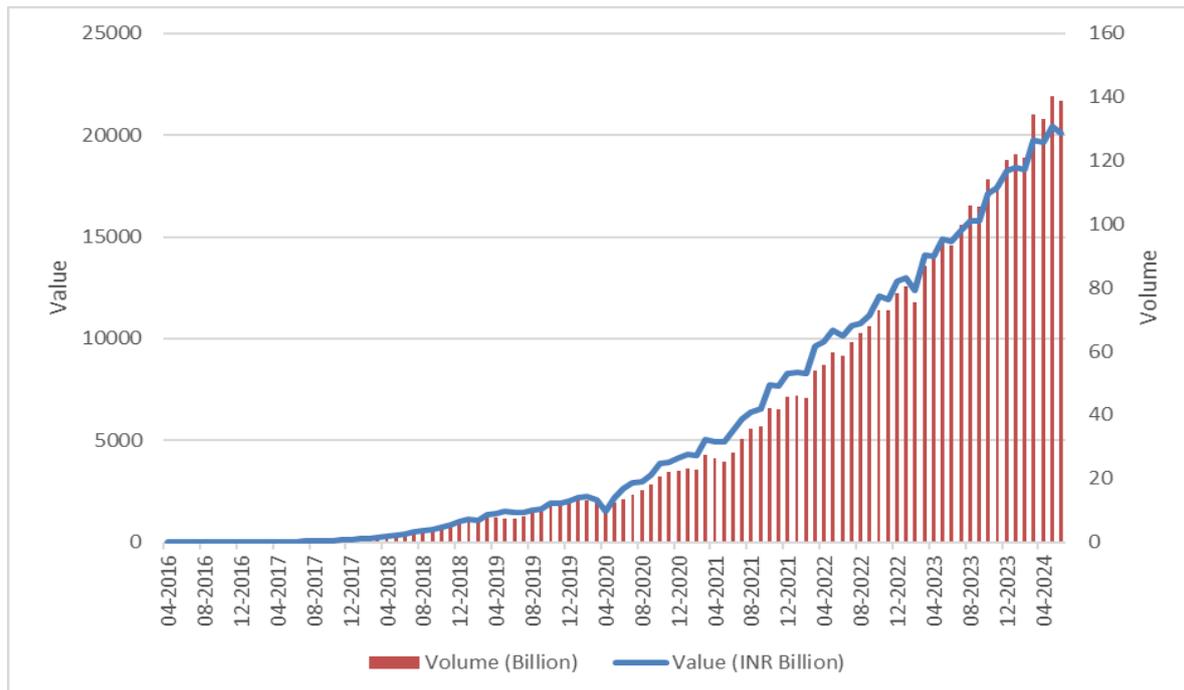
In parallel, the rapid adoption of UPI has revolutionized India's digital payments landscape. As of May 2024, UPI accounted for over 75%

Number of PMJDY Beneficiaries

Source: CEIC

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UPI Transactions

Source: CEIC

of all retail payments in India, supporting real-time, low-cost transactions that empower small businesses, informal workers, and the previously unbanked to participate more fully in the digital economy.

DPI's role is not confined to finance. It serves as a foundational infrastructure for improved public service delivery across a range of sectors, including education, healthcare, and agriculture. By enabling seamless integration between government systems and digital platforms, DPI has facilitated more transparent, efficient, and accessible service delivery, particularly for underserved populations. In education, the government has leveraged digital tools to expand access to learning resources and teacher training. The COVID-19 pandemic underscored the critical importance of such platforms. With physical classrooms closed for extended periods, digital learning solutions supported by DPI became essential in ensuring educational continuity. In many cases, these platforms were the only means of maintaining access to instruction, helping to mitigate learning losses, particularly in rural and low-income areas.

Beyond education, DPI has also supported the expansion of telemedicine services and digital health record systems. In the agricultural sector, mobile-based advisory platforms have enabled farmers to access market information, government subsidies, and weather alerts. These developments highlight the broader utility of DPI as a tool for inclusive human capital development, reducing barriers to public services and enabling more equitable participation in social and economic systems.

III. Remaining Challenges and Implications for Korea-India Cooperation

Despite these advancements, India's digital transformation remains uneven and faces significant barriers. Internet penetration, device ownership, and digital literacy levels continue to vary widely across geography, income, and gender. Rural areas, in particular, suffer from poor network coverage, intermittent electricity supply, and limited affordability of smartphones and data plans. Women and girls face additional barriers, including limited control over mobile devices and cultural norms that restrict internet use. Even among those with access to devices, many lack the skills necessary to navigate digital systems for banking, education, or employment. Without targeted interventions, these gaps risk entrenching a new form of digital exclusion, wherein large segments of the population remain disconnected from the benefits of digital development.

In this context, India's experience with DPI offers valuable insights for other developing countries seeking inclusive models of digital transformation. Its ability to provide essential services through interoperable and open-source infrastructure highlights how digital systems can function as public goods. However, the persistence of access, affordability, and skill barriers underscores the need for complementary investments in digital literacy, localized service design, and resilient infrastructure. Addressing these challenges will be critical to ensuring that the digital revolution uplifts all citizens, not just the digitally privileged.

India's DPI model also opens up meaningful avenues for bilateral cooperation with countries like Korea. Given Korea's strengths in digital infrastructure, cybersecurity, and fintech innovation, several areas of collaboration stand out. First, infrastructure cooperation can focus on extending stable broadband and power networks to India's underserved regions. Second, Korea's experience in developing secure and user-friendly digital financial systems can complement India's DPI by improving cybersecurity standards and building user trust. Third, joint efforts in digital financial education and AI-driven credit models can enhance financial inclusion among low-income and digitally marginalized groups. Finally, bilateral capacity-building initiatives in cybersecurity and data protection could help India address its growing concerns around digital fraud and privacy.

In conclusion, India's approach to digital transformation, anchored in a robust public infrastructure model, demonstrates the potential of digital systems to accelerate inclusive development. By integrating identity, payments, and data under a unified framework, India has laid the groundwork for a more transparent, accessible, and citizen-centric digital economy. Yet the road ahead requires sustained efforts to close persistent divides and ensure that digital progress does not become a new source of inequality. As India aspires to build a $1

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trillion digital economy by 2026, its experience offers a compelling case study in how technology, when designed as a public good, can drive both innovation and equity. For Korea, this presents a strategic opportunity to engage in meaningful cooperation that not only strengthens bilateral ties but also contributes to a more inclusive digital future in the Global South. **KIEP**