International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

G20 — Technological Transformation and Digital Public Infrastructure in Mexico

Poorak Gupta

Ahlcon International School

Abstract

This research paper explores Mexico's evolving digital public infrastructure (DPI) within the framework of the G20, focusing on its role as a catalyst for national digital transformation and socio-economic progress. By reviewing government strategies, sectoral developments, and global reports, this study highlights Mexico's commitment to enhancing telecommunications, health systems, education, and the space industry through the implementation of digital policies and infrastructure. The paper also critically evaluates Mexico's successes and lingering challenges, including digital inequality, funding limitations, and gaps in regulatory frameworks.

These factors underscore the importance of cohesive policy design and international cooperation to ensure that Mexico's digital evolution remains inclusive, sustainable, and globally competitive.

1. Introduction and Background

The G20, as the premier international economic cooperation forum, plays a pivotal role in shaping global economic strategies. For Mexico, the G20 provides an invaluable platform for not only collaborating on global issues but also for strengthening its national digital strategy. Mexico's vision for technological transformation leverages its participation in this forum to promote policy alignment, share experiences, and adopt international best practices in digital governance.

Digital Public Infrastructure (DPI) is central to this transformation. DPI enables governments to design, deliver, and scale citizen-centric services by integrating secure, interoperable, and reliable systems. DPI addresses various developmental needs, such as identity systems, payment platforms, data-sharing frameworks, and regulatory oversight.

For Mexico, robust DPI offers an opportunity to overcome long-standing socio-economic divides, boost productivity, and modernize the country’s public service landscape, ultimately improving citizen welfare and reinforcing Mexico's position in global digital ecosystems.

2. Rationale

1. **Digitalisation of Government and Economy**: Improving transparency, governance, and efficiency in public service delivery, especially during crises like the COVID-19 pandemic.
2. **Telecommunications and Connectivity**: Ensuring equitable access to information, high-speed internet, and telecommunications infrastructure as digital connectivity forms the foundation of all DPI initiatives.
3. **Health and Education**: Leveraging digital health solutions and online learning ecosystems to enhance Mexico's human capital and reduce inequality in access to essential services.
4. **Space Research and SME Development**: Using technological advancements to foster innovation-

driven economic growth, space exploration, and empower micro, small, and medium enterprises (MSMEs).

3. Research Review

Mexico's "Digital Strategy 2021-2024" underscores its twin goals: modernizing the public sector via digitalization and expanding national broadband coverage. Yet, the path toward digital sovereignty is shaped by the interplay of public-private partnerships, regulatory frameworks, infrastructure investment, and civic engagement.

3.1 Smart City Initiatives

Mexico's urban centers are piloting Smart City projects that use data and digital tools for improving public safety, waste management, transportation, and energy use.

Cities like Guadalajara and Mexico City are deploying IoT sensors for real-time traffic management and air quality monitoring.

3.2 Telecommunications Transformation

The creation of the Federal Telecommunications Institute (IFT) in 2013 marked a watershed moment in Mexico's telecom regulation. The IFT broke market monopolies, encouraged competition, and paved the way for 5G rollout.

The declaration of internet access as a constitutional right further solidified the state's obligation to bridge the digital divide, although rural and indigenous communities still experience infrastructure shortfalls.

3.3 Healthcare Digitalization

Mexico's National Digital Health Strategy aims to create electronic health records, deploy telemedicine services, and improve health data interoperability across federal and state health systems. Despite the ambitious goals, healthcare delivery continues to grapple with fragmented IT infrastructure and unequal resource allocation.

3.4 Digital Education Transformation

During the COVID-19 pandemic, Mexico's Ministry of Education introduced the "Learn at Home" initiative to minimize academic disruption. Broadcasting lessons via television and digital platforms helped reach students nationwide, but a lack of internet infrastructure in rural zones exposed systemic weaknesses.

The PIAD program supplements this effort by offering digital literacy workshops for students and teachers, promoting safe internet use and strengthening digital skills.

3.5 SMEs and Open Banking

Digital adoption among SMEs has surged post-pandemic, driven by e-commerce expansion, cloud computing, and financial technology innovations. Mexico's proactive open-banking regulations enable SMEs to leverage customer data, access credit, and streamline transactions. However, digital illiteracy and low trust in

financial institutions remain bottlenecks.

3.6 Space Sector Development

The National Space Institute (INSA) and private startups are advancing nanosatellite programs, AI-driven drone applications, and indigenous space vehicle development. However, the absence of a centralized space data repository and persistent reliance on foreign satellite services limit the sector's growth.

4. Data Analysis

Metric	Insights
E-commerce growth	Increased by 27% in 2021 compared to 2020
Digital maturity	Ranked 55th globally out of 151 nations (McKinsey, 2021)
Broadband access	Approximately 20 million Mexicans lack reliable broadband coverage
Digital health market	Projected CAGR of 8.89% between 2023 and 2027
SMEs	Account for 95.4% of businesses but contribute only 52% of GDP
Education tech gap	31% of students lacked sufficient tech access during remote learning (2020)
Digital finance adoption	28% of users unwilling to share banking information online

5. Space Program Timeline

Year	Milestone
2010	Established National Space Agency
2019	Launched first satellite, SATMEX-7
2023	Scheduled first Mexican astronaut mission to the ISS
Curren t	Developing indigenous launch vehicle and human spaceflight program

6. Conclusion

Mexico's strides in digital public infrastructure signify a strategic move toward embedding technology in all facets of its governance, economy, and society. Its participation in the G20 positions the nation to learn from global digital leaders while showcasing its own scalable solutions.

However, addressing challenges such as unequal digital access, funding shortages, and the need for coherent long-term policy planning will determine Mexico's success in achieving digital sovereignty and economic resilience.

A collaborative approach involving government agencies, private sector partnerships, and international platforms such as the G20 will remain crucial in overcoming these hurdles and ensuring that Mexico's digital transformation fulfills its promise of sustainable, inclusive growth.

References

1. U.S. Department of Commerce. "Mexico — Healthcare Products and Services." *Trade.gov*, 2023.https://www.trade.gov/country-commercial-guides/mexico-healthcare-products-services
2. Center for Strategic and International Studies. "The Development of the ICT Landscape in Mexico." *CSIS.org*, 2022.https://www.csis.org/analysis/development-ict-landscape-mexico-cybersecurit y-and-opportunities-investment
3. OECD. "Mexico's Digital Government Transformation." *OECD iLibrary*, 2021. https://www.oecd-ilibrary.org/sites/e4318dd6-en/index.html
4. McKinsey & Company. "How Mexico Can Become Latin America's Digital Government Powerhouse." *McKinsey Digital*, 2023. https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/how-mexi co-can-become-latin-americas-digital-government-powerhouse