Research Title

Understanding Forecasting/Quantification for Paracetamol and Iron tablets in Nepal's Public Health System: A sub-national level assessment

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Background and Objective

The Foundation of Primary Healthcare

Accurate Quantification & Forecasting

Procurement & Sub-National Distribution

Paracetamol → General Primary Care

Iron Tablets → Maternal Health

Efficient supply chain management prevents stock-outs and minimizes expirations. Accurate quantification is the foundational first step. Without it, the entire downstream delivery system fails.

The Core Tension

Essential medicines (Paracetamol & Iron) are critical to national health security, yet the supply chain is compromised by inaccurate forecasting, leading to frequent stock-outs or wasteful expiry.

Paracetamol and Iron: The Pulse of Primary Care

Iron: Maternal Health & Anemia

Critical for government supplemental programs for pregnant women (DoHS, 2022).

Paracetamol: Fever & Pain

First line of defense for primary care management.

The Objective is to find out the Vital Link

These are not just commodities; they are the most widely used inputs for primary health care.

Operational supply chains are critical inputs to national and regional health security (Donato et al, 2016).

If we cannot accurately forecast these high-volume, low-cost essentials, the entire system's responsiveness is in question.

Methodology

Sub-National Study Footprint (Jan-Nov 2025)

Approach: Mixed method (Quantitative and Qualitative).

Stratified Sampling (N=325).

325
Total Health Institutions Assessed

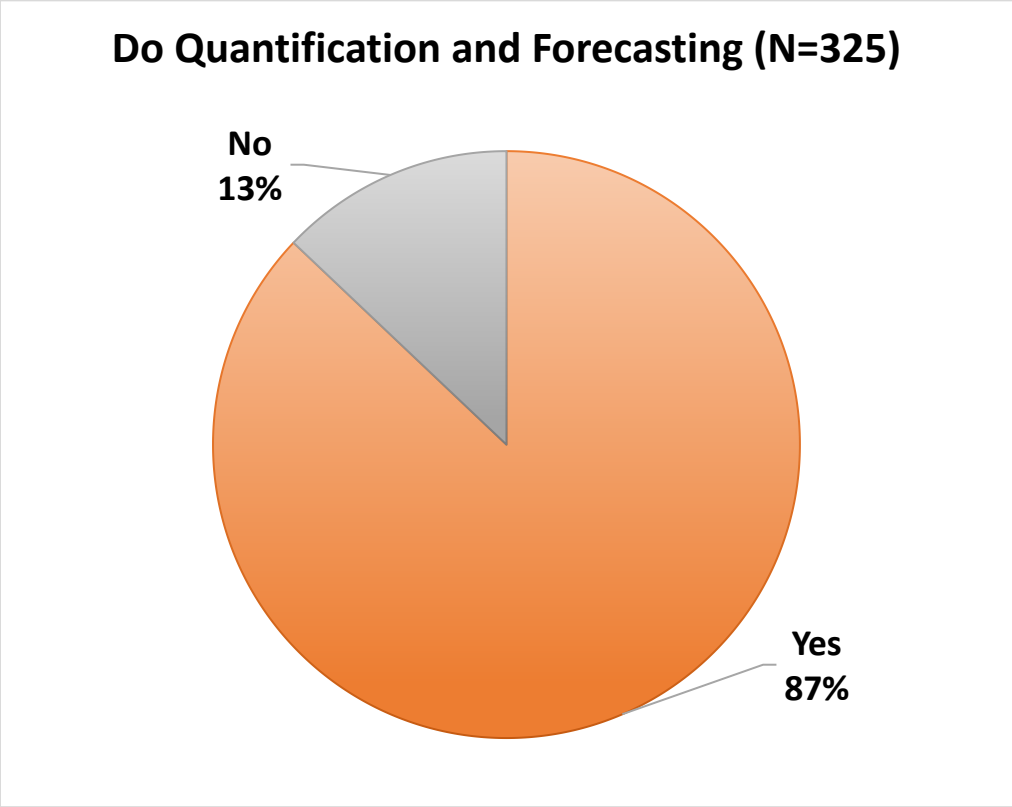
7
Provinces Covered

44
Districts Covered

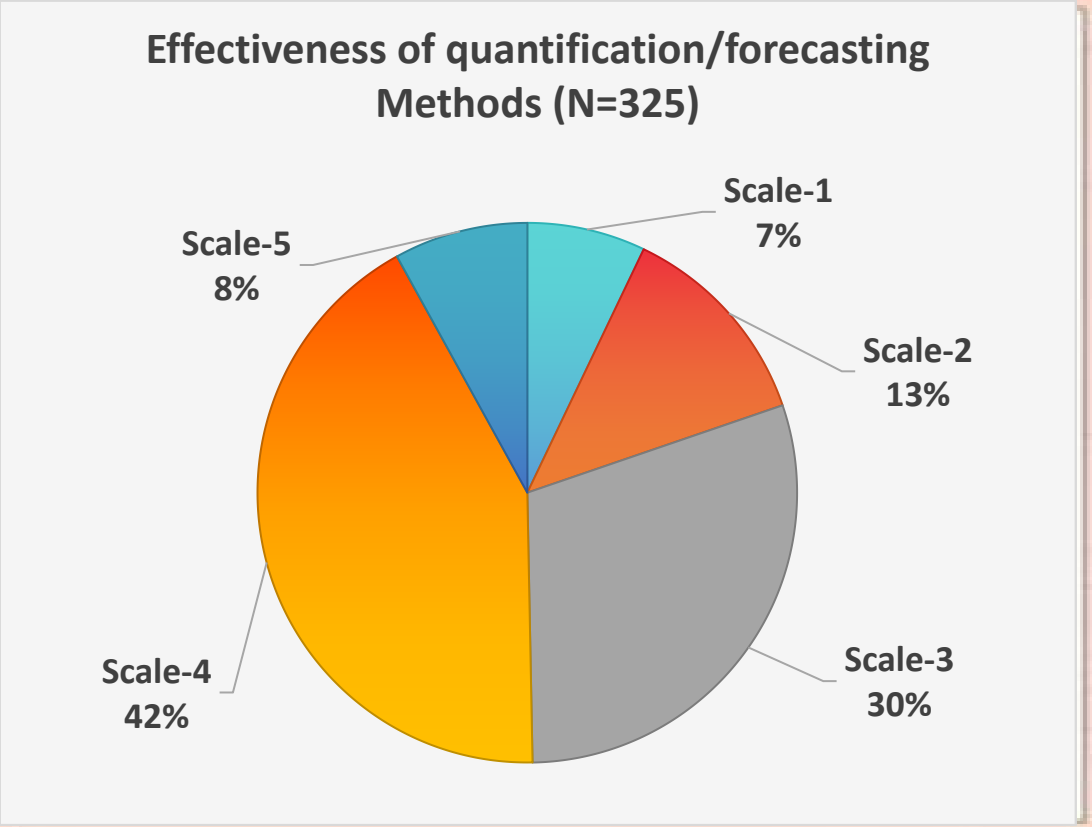
HF Covered: Health Posts, Primary Healthcare Centers, Hospitals, Rural and Urban Municipalities, Urban Health Centers, Basic Health Centers, and Academic Institutions.

Results

The Core Paradox: High Compliance vs. Low Confidence

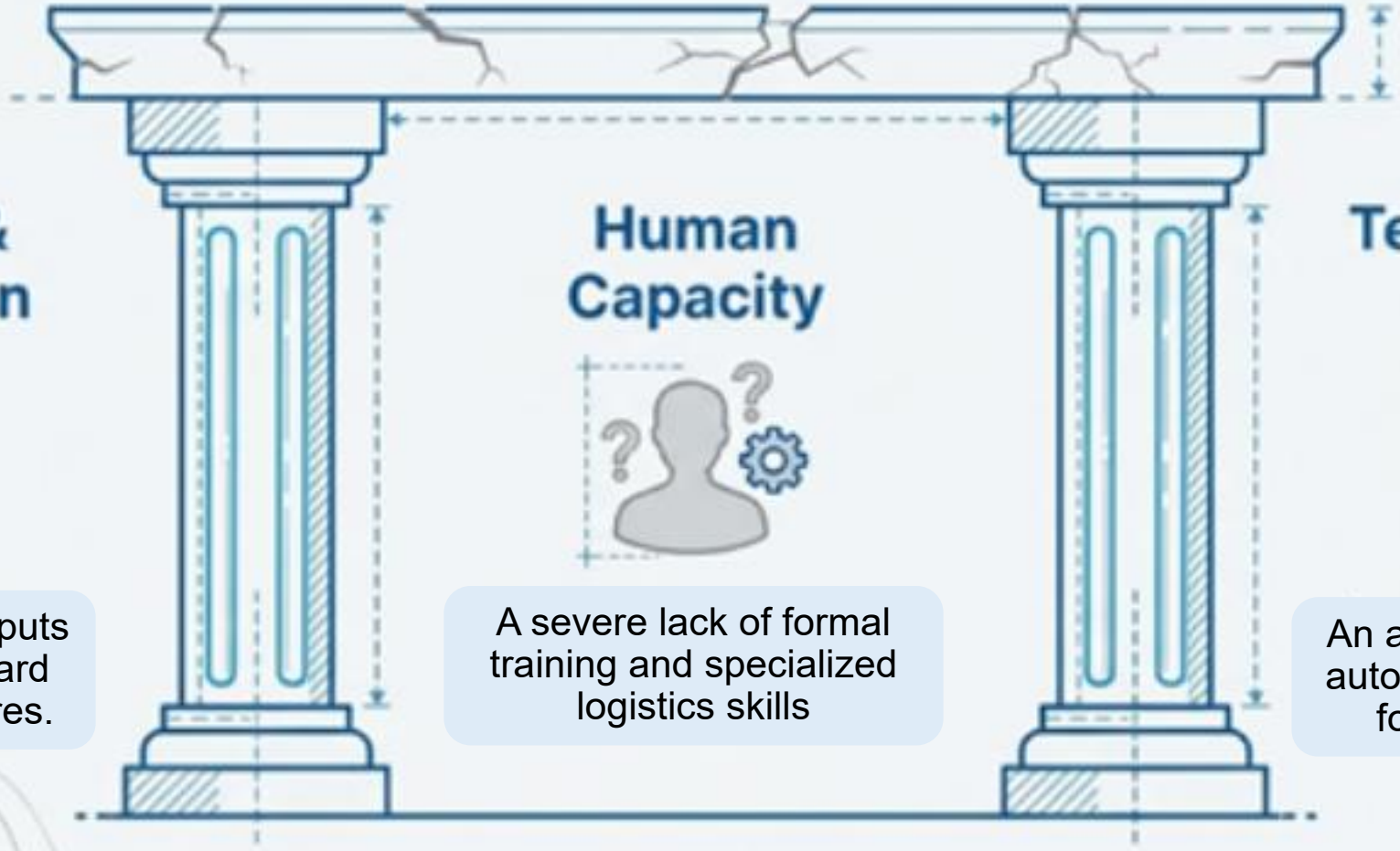


87% of health institutions go through the process of quantification & forecasting before procurement.



Yet, 50% of the staff admit their current methods are ineffective **(scoring 1-3 out of 5)**.

Diagnostic Framework: Three Pillars of Failure



Process & Information

Inconsistent data inputs and missing standard operating procedures.

Human Capacity

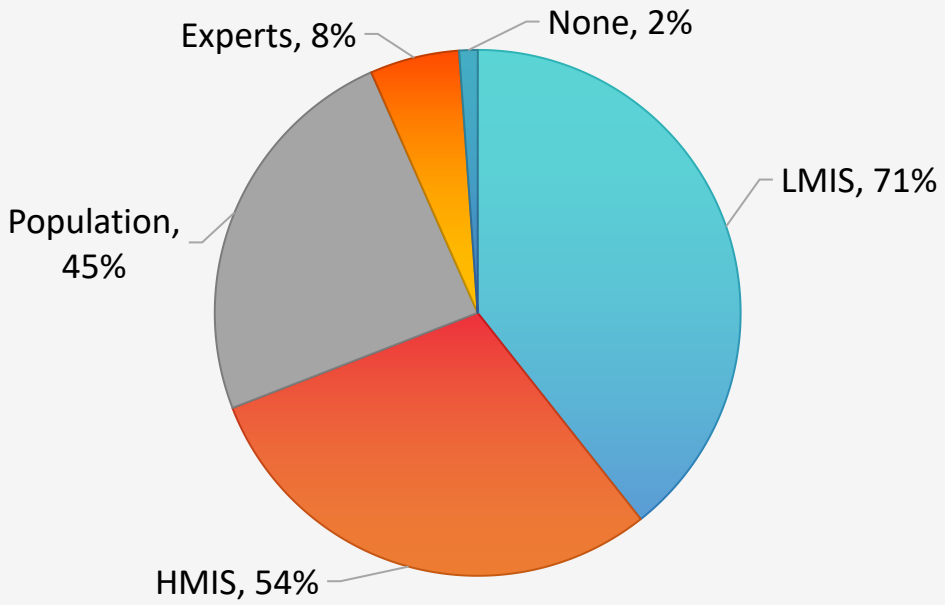
A severe lack of formal training and specialized logistics skills

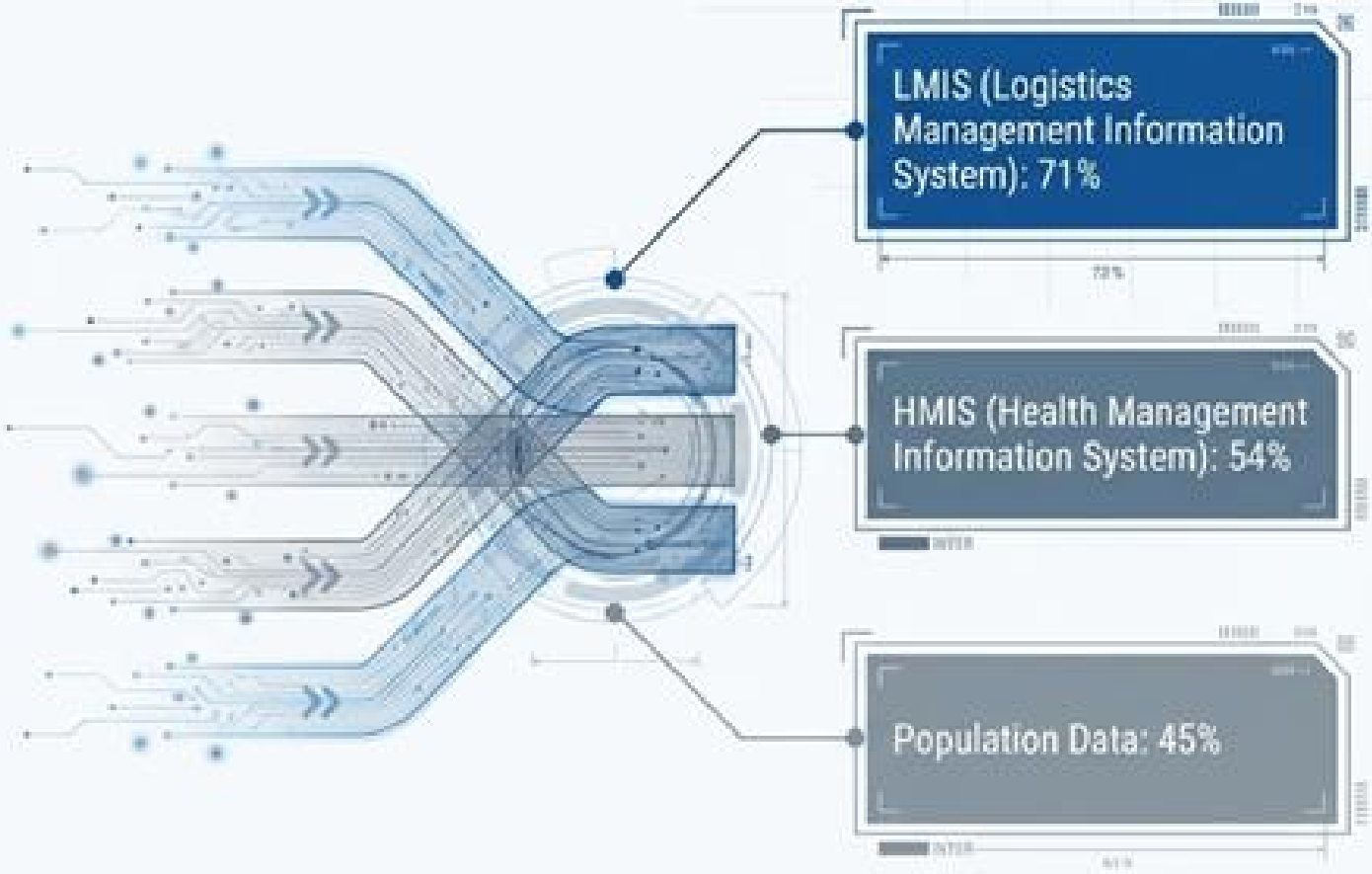
Technological Void

An almost total absence of automated quantification & forecasting software.

Pillar 1: Information Fragmentation

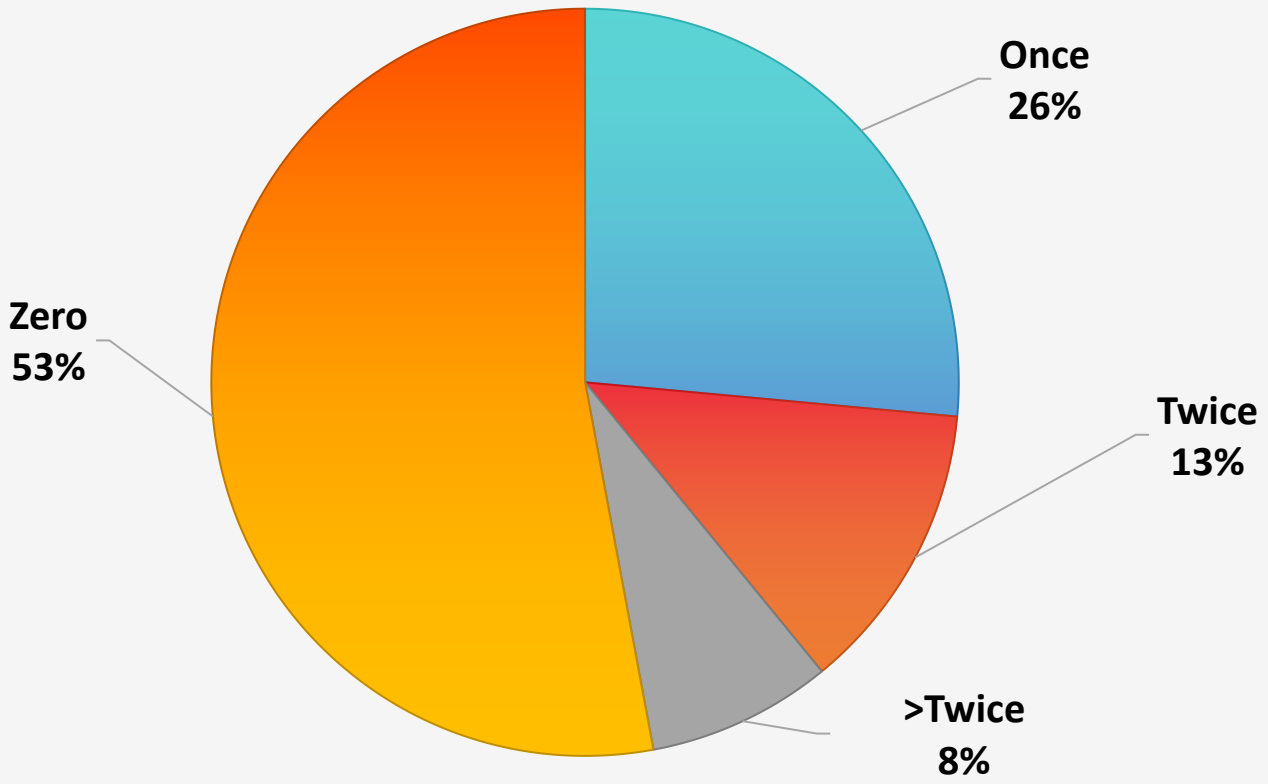
Types of Data used in Quantification & Forecasting (N=325)





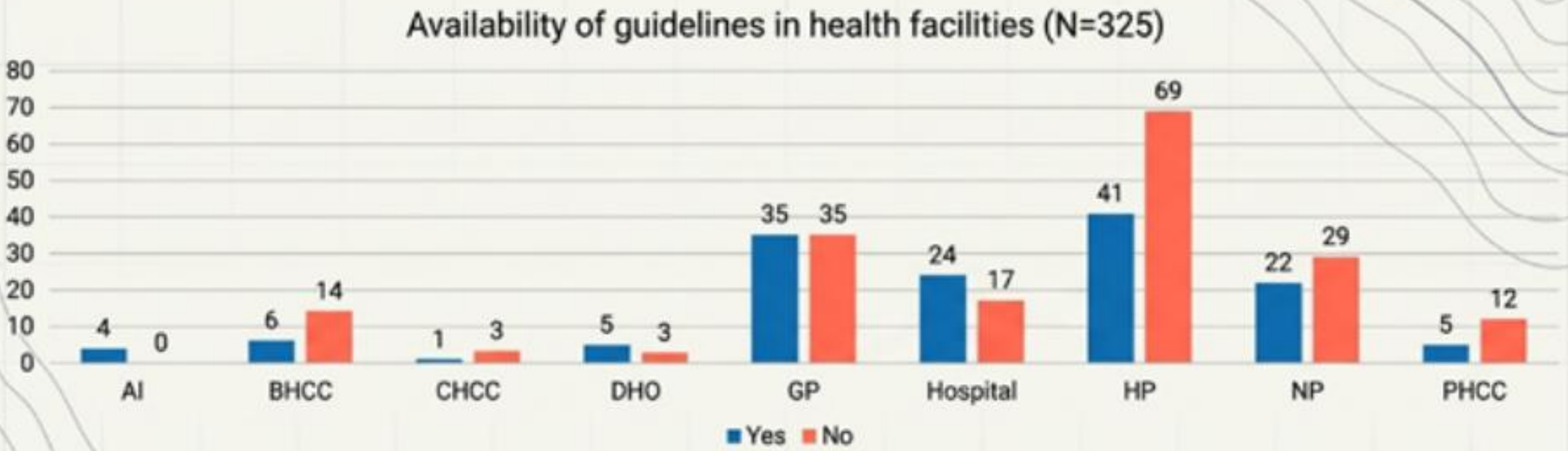
No Clear Formula. While LMIS reliance is high (and varies significantly by facility type), the combination of HMIS, Population data, and Expert opinion is highly inconsistent. High-quality routine health information systems exist, but underutilization and lack of standardized formulas lead directly to stock-outs.

Stock-out of Iron and Paracetamol tablets in the last 12 months (N=325)



47% of health facilities reported that they had experienced stock-out at least one-time of Iron and Paracetamol tablets during the last 12 months.

Pillar 1: The Guideline Deficit

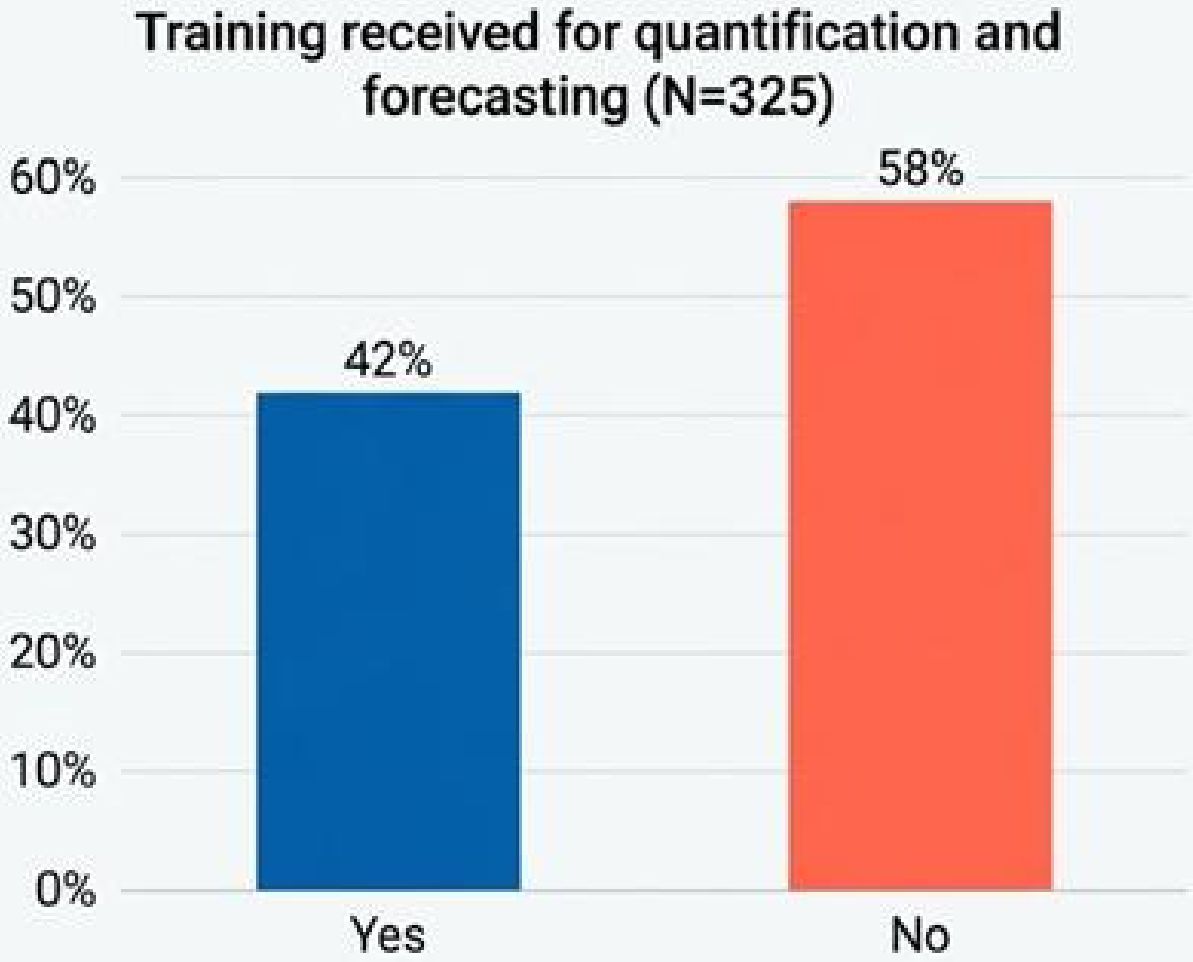


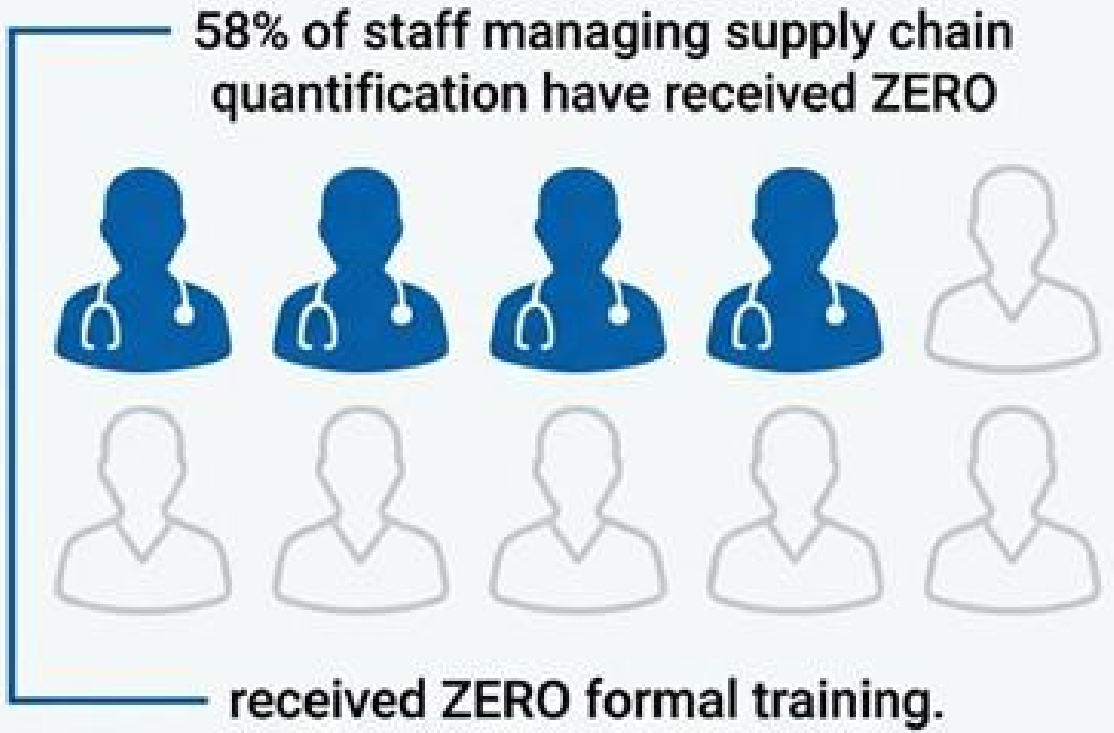
56% lack printed guidelines.

Operating Blind

More than half of all health institutions do not have printed quantification or forecasting guidelines on their premises. Without standard operating procedures, staff are forced to rely on guesswork, instutionalizing inefficiencies.

Pillar 2: The Human Capacity Gap

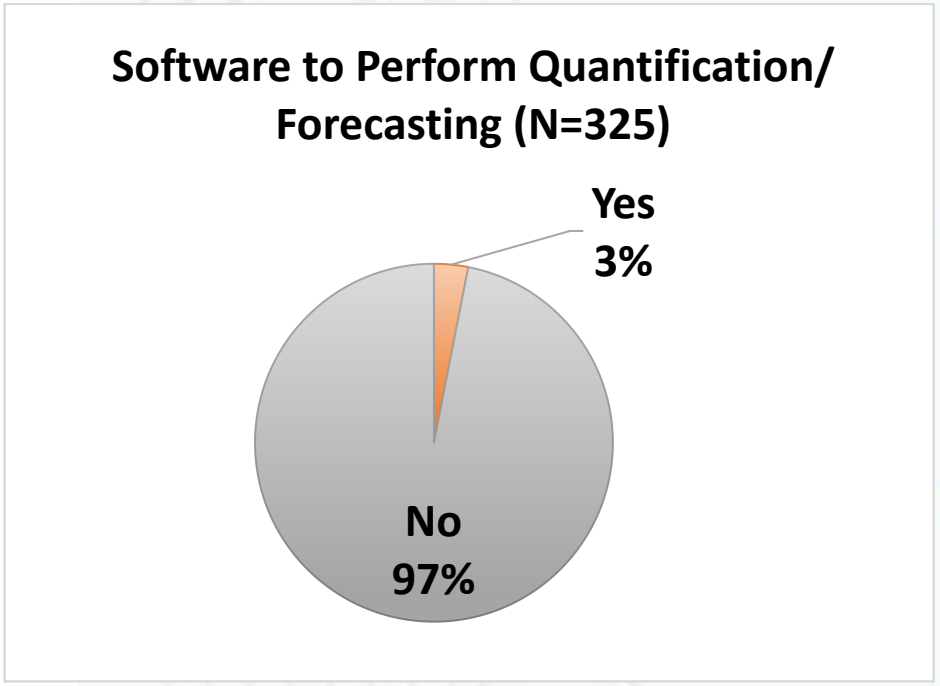




Statistical analysis reveals a significant disparity in training status across different facility types, indicating a highly uneven distribution of logistics competence nationwide.

Takeaway: Supply chain management requires specialized mathematical and logistical competencies. Relying on untrained staff gurantees forecasting failure.

Pillar 3: The Technological Void 97%



The Void (97%)

Do not have any computer-based automated software for quantification/forecasting

The Exception (3%)

Report using a computer program.

The reality of the 3%

Further examination reveals these ‘computer program’ are simply manual MS-Excel spreadsheets.

In an era of advanced IT and AI (artificial inteligence), quantification and forecasting are done entirely manually. The total absence of automated tools is a critical bottleneck to modernization and program efficiency.

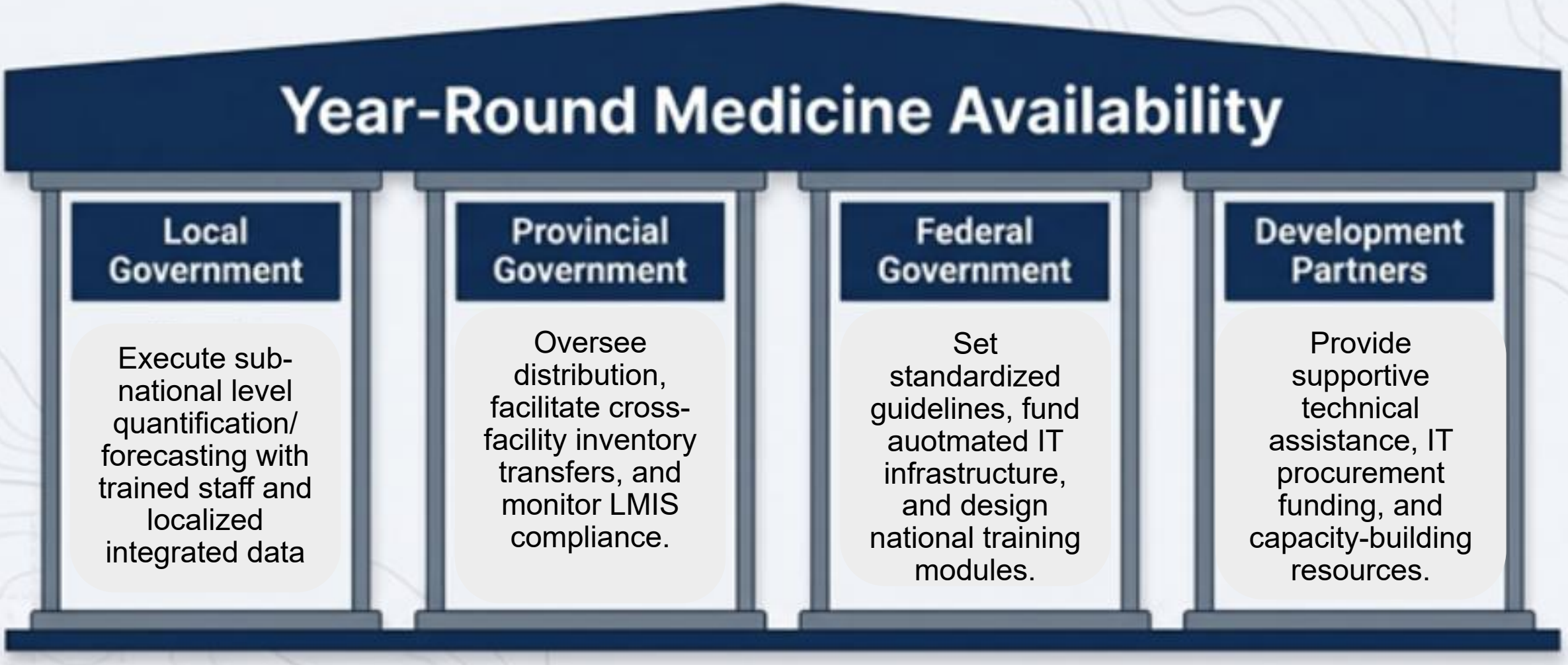
Reality vs. Required Standard

Bridging the Sub-National Supply Chain Gap

	Current Reality	Required Standard
Data & Information	Fragmented, inconsistent use of LMIS, HMIS, and Population data.	Unified, integrated utilization of standardized health information systems.
Process & Execution	Manual guesswork; 56% operate without written guidelines.	Deployment of automated software and strictly enforced Standard Operating Procedures (SOPs).
Workforce Capacity	58% of staff lack formal forecasting training.	A continuously trained, certified logistics workforce stationed at sub-national levels.

Conclusion

A Mandate for Coordinated Action

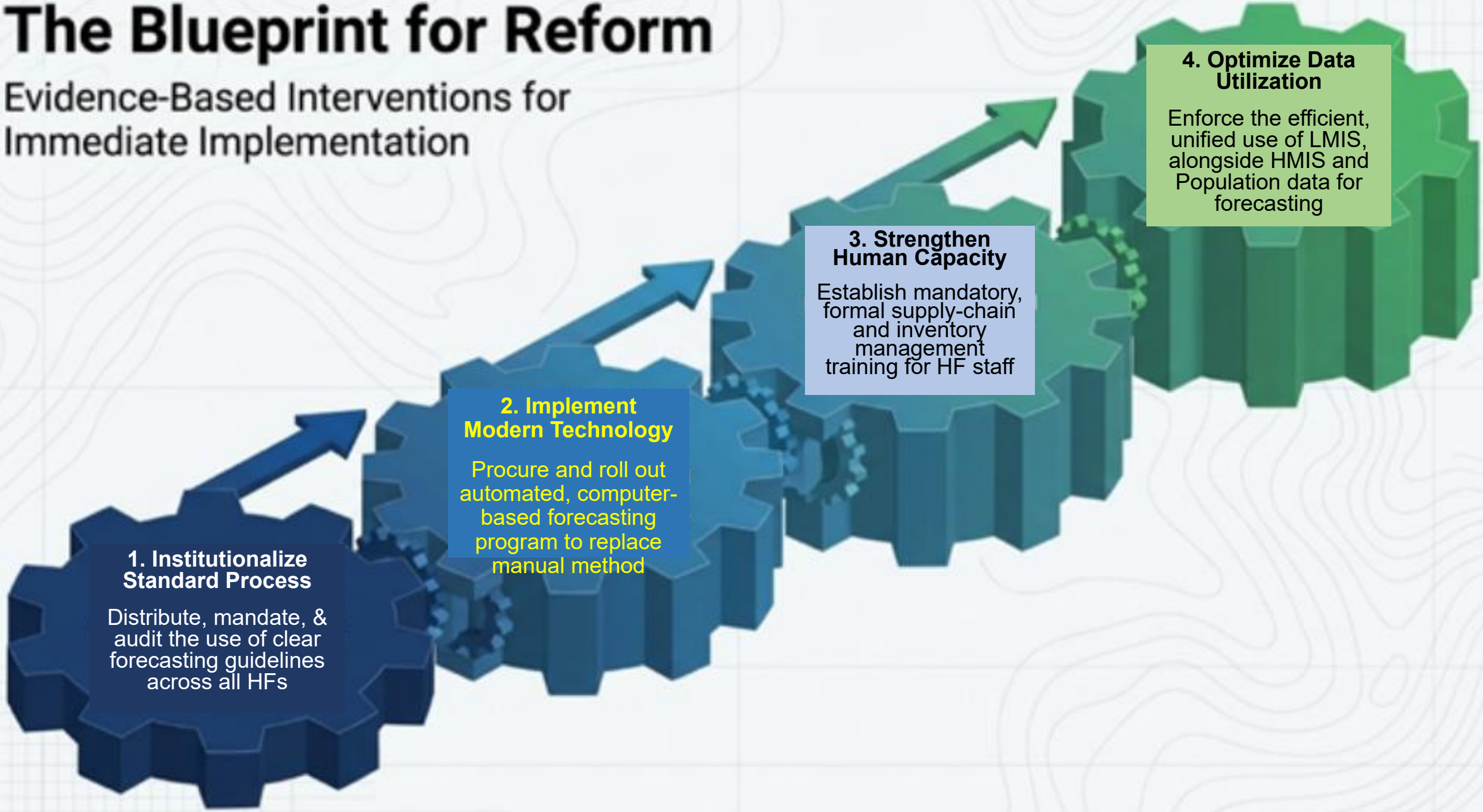


Overcoming these sub-national limitations requires a concerted, synchronized effort to guarantee the unintrupted, year-round availability of essential medicines for the people of Nepal.

Take Away Messages

The Blueprint for Reform

Evidence-Based Interventions for Immediate Implementation



Short Bio of the Lead Author:

- Heem Shakya is a Procurement, Supply Chain Management and Health System expert with 25+ years of professional experience in Nepal, Indonesia, Cambodia, and Afghanistan.
- Mr. Shakya is currently a Ph.D Scholar at NOIDA International University, New Delhi India.

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Thank you!