Village Digital Accessibility Index (VDAI) Approach

Methodology

- **Analyze Indicator Relationships with Covariance Matrix**: Use the covariance matrix to measure how indicators like internet access, device ownership, and digital literacy vary together, revealing patterns of digital accessibility across villages.
- **Perform PCA Decomposition**: Apply PCA decomposition to the covariance matrix to identify principal components, consisting of eigenvectors (weights) and eigenvalues (variation explained), capturing the most significant combinations of indicators.
- **Select Key Principal Components**: Choose the top principal components, typically the first one or two, that explain the majority of variation in the data, based on their eigenvalues, to represent digital accessibility.
- **Execute PCA Transformation**: Transform the standardized indicators into principal component scores using the eigenvectors, creating a weighted combination that forms the VDAI score for each village.
- **Apply the VDAI**: Use the VDAI scores to rank villages, inform targeted policy interventions, and monitor improvements in digital access over time.