# OUTLINE OF LATEST TOOLS AND TECHNOLOGIES FOR POPULATION AND HOUSING CENSUS

## Review of Data Processing Activities in Population & Housing Census 2017

### Processing and Compilation of Provisional Results

### Scanning of Short Form

### Pre-Imputation Processing

### Imputation / Data Cleaning Activity

### Data Analysis Module

### Tabulation/ Report Generation Software

## Limitations of Partial Usage of Technology

### Delayed Result Generation

### Non-Usage of GIS Technology for Effective Control and Monitoring

### Lack of Online Progress Review & Online Quality Control Mechanism

### No Provision of Instant Change Incorporation in Questionnaire

### Absence of Prompt Messaging System

### Non-Coverage and Block Overlapping Issues

### No Provision of Time Flexibility for Enumeration

## Comparative Study of Census Data Collection Methods in Neighboring & Advanced Countries

### Analysis of Key Contributing Attributes that Effect Data Collection Mechanism

### Exploration of Different Data Collection Methodologies being used in Latest Population Censuses

### Usage of GIS Technology during Population Census and its effectiveness

### Role of National Registers to Enrich Census Activity

### Study on Pre-Census Pilot Surveys in Different Countries

### Effectiveness of Third Party Services during Population Census

## Recommendations Regarding Data Collection Methods for Upcoming Census of Pakistan

### Web Based Self Enumeration

### Computer Assisted Personal Interviewing (CAPI)

### Computer Assisted Telephonic Interviewing (CATI)

### Paper and Pencil Personal Interviewing (PAPI)

### OCR Pen Based Interviewing

## Technological Framework for Upcoming Census

### Identification of Software Licenses to be Purchased & Applications to be Developed

### Hardware Requirement

### Strategy for GIS mapping and Geo Tagging Techniques

### Establishment of IVR Infrastructure

### Formation of Hardware and Software Support Teams and their Deployment

### Disaster Recovery Plan

### Audit of Hardware Infrastructure and Quality Assurance of Software Applications

### Data Communication Infrastructure

### Implementation of Big Data and Machine Learning Framework

## Advantages of Latest Tools and Technology in Population & Housing Census

### GIS based Monitoring and Block Boundary Restriction for Enumerator to Avoid Block Overlapping

### Real Time Progress Monitoring, Trend Analysis & Forecasting

### Real Time Questionnaire Change Facility

### Online Task Allocation & Management

### Data Quality Assurance with IVR Technology

### Instant Messaging to Enumerators through Hotline

### Real Time Insights on Dashboards for Stake Holders and Decision Makers

## Value Addition

### Enabling Respondents to View their Data during Census after their Enumeration

### Empowering Public to Update their Information after Census Result Declaration