

# Utilization of Information Communication Technologies (ICT) in National Economic Census 2018 of Nepal: A Good Experience and Challenges



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Seminar on Utilization of ICT for Official Statistics 13 December  
2019, Chiba, Japan

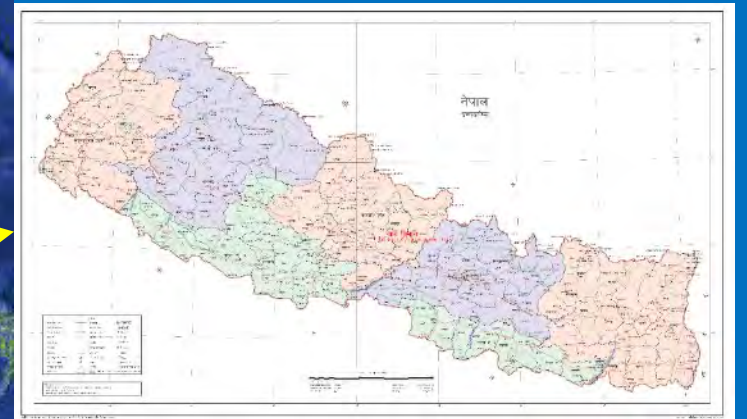
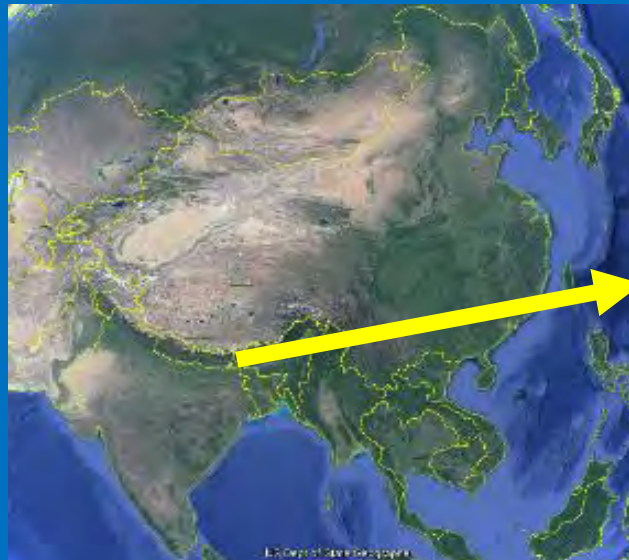
**December 13 2019**

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# 1. Introduction

- Country Profile:
  - Landlocked country of the south Asian region
  - Country of MOUNT EVEREST
  - Area: **147,181** sq km.
  - Three ecological belts: Mountain, Hill and Terai
- Federal Structure:
  - 7 Provinces,
  - 77 Districts,
  - 753 Local Levels,
  - 6743 wards



# 1. National Statistical System of Nepal

- At present Decentralized Systems
  - Different agencies produce official Statistics
- Data Sources
  - Censuses
  - Surveys
  - Administrative Records
- Legal System
  - Constitution of Nepal 2015
  - Statistical Act 1958 and Regulation 1984
  - Designated acts and regulations like Central Bank Act
  - National Strategy for Development of Statistics
- Major Data Producing Agencies
  - Central Bureau of Statistics
  - Central Bank
  - Ministries/Departments/Local Offices
- Data Stakeholders
  - Government
  - Non-Government
  - International Organizations
  - Universities
  - General Public
- NSDS endorsed by GoN

# 1. Central Bureau of Statistics (CBS)

- Established in 1959 under Statistics Act, 1958 AD
- The central government official statistical agency for the collection, consolidation, processing, analysis, publication and dissemination of statistics in Nepal
- One of the responsibility is introduce new technological advancements, international procedures and country practices in order to make more scientific, reliable and useful data collection, processing and analysis method despite other main roles of CBS.

# 1. Organizational Structure of CBS

- Consists of Three Divisions and 18 Sections:
  - **Planning, Human Resource Development Division**
    - *Planning Section, Coordination and Standardization Section, Sampling Design section, Publication, Dissemination and Library Section, Training Section*
  - **Economic Statistics Division**
    - *Manufacturing Census and Survey, National Account, Price Index, Agriculture Census, Agriculture Statistics and Forestry Statistics, Trade, Economic Census*
  - **Social Statistics Division**
    - *Population Census, Social Statistics, IT and data processing, Environment Statistics, Household Survey*
- **33 Statistics Offices at Districts Spreading Throughout the Country**
- **532 Human resources (148 at Center and 384 at 33 Statistics Offices at districts)**

## *2. Major Statistical Operations in Nepal*



SN	Some Major Statistical Activities/ Information Systems	Mode of collection/ Compilation	Organization
1	Population censuses	<i>Paper based Questionnaire</i>	CBS
2	Agriculture Sample Censuses	<i>Paper based Questionnaire</i>	CBS
3	National Living Standard Survey	<i>Paper based Questionnaire</i>	CBS
4	Nepal Multiple Indicators Cluster Surveys	<i>CAPI (Tablet)</i>	CBS
5	Nepal Labor force survey	<i>CAPI (Tablet)</i>	CBS
6	National Economic Census	<i>Paper + Tablet + Online</i>	CBS
7	Manufacturing establishment census/ Industry Survey	<i>Paper</i>	CBS
9	Household Budget Survey	<i>Paper</i>	<b>Central Bank of Nepal</b>
10	Demographic Health Survey	<i>Tablet</i>	Ministry of Health
11	Education Management Information System	<i>Administrative Record System</i>	Ministry of Education
12	Health Management Information System	<i>Administrative Record System</i>	Ministry of Health
13	National Data Profiling System	<i>Online</i>	CBS/ Different Designated Agencies

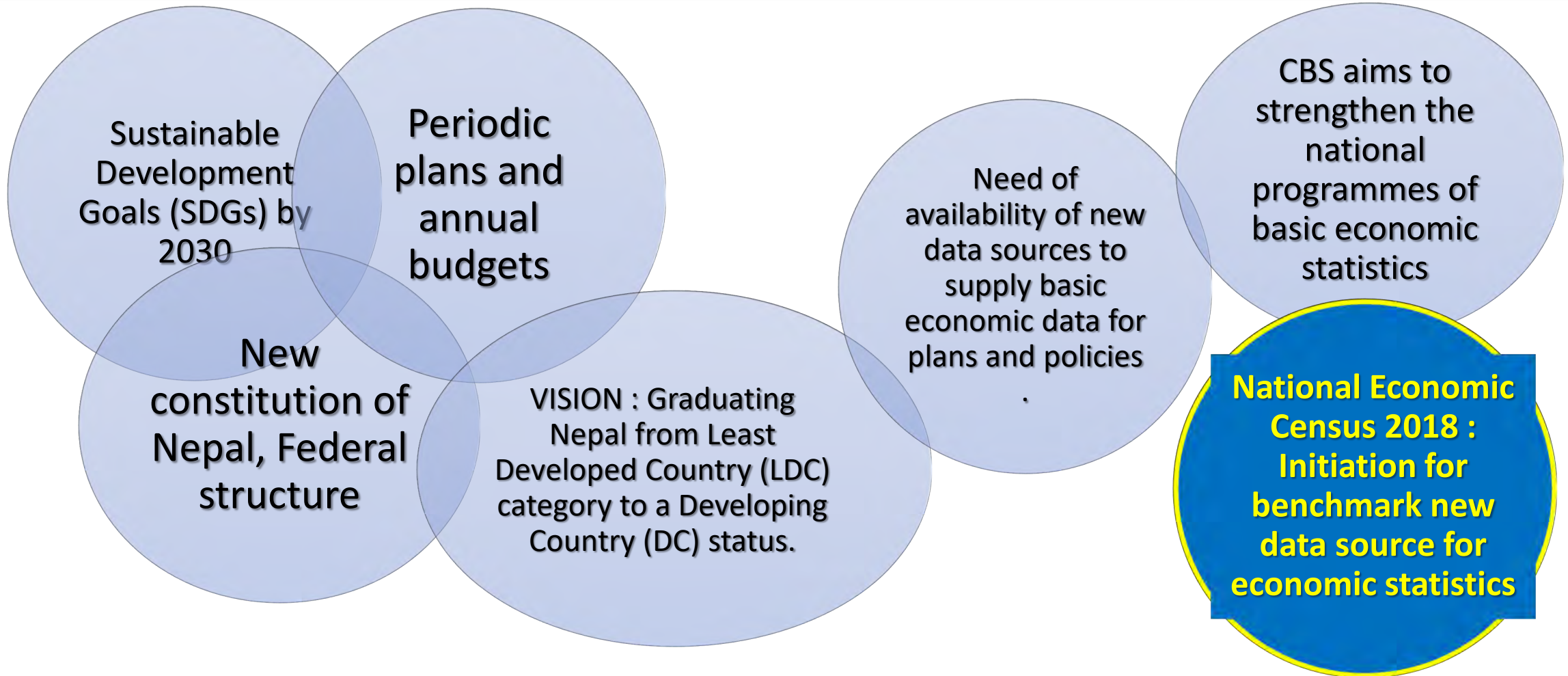


## 3. OUTLINE OF NATIONAL ECONOMIC CENSUS OF NEPAL

## 3. Outline of Economic Census in Nepal ...

- **Strengthening Economic Statistics has been a Global Agenda**
- **Focused on Core set of economic statistics**
- **Efforts of international agencies towards enhancing economic statistics**
- **Emphasizing in the need of integrated economic statistics from various sources**
- **Institutionalisation of regular economic data sources (economic Census, SBR, Administrative Records) mechanisms for generating quality of economic statistics**
- **First National Economic Census of NEPAL in 2018 to fulfil the gap in economic statistics as a benchmark frame for economic surveys.**

# 3. Need of new data sources for...



### 3. First National Economic Census 2018 of NEPAL

- The census of economy through counting all units of economic activities in Nepal
- The total process of collecting, compiling, evaluating, analyzing, publishing and dissemination of the results.

**2018 April 14-June 14 ; Enumeration of Two Months Period**

## 3. Basic Objectives

**Provide the fundamental statistics on the current status of the business activities of the establishments**

**Provide with the basic economic statistics at central, province and local levels**

**Enhance National Accounts System**

**Benchmark statistics for establishing Nepal Statistical Business Register (SBR)**

**Provide statistics of related field to the business owners or experts, researchers and other statistics users**

### 3. Census organisation

Central Bureau  
of Statistics

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graph TD; A[Central Bureau of Statistics] --> B[Seventy-seven District Economic Census offices]; A --> C[About 4500 Field officials involved];
```

Seventy-seven District  
Economic Census offices

About 4500 Field  
officials involved

## 3.Resources

- Policy and Budget Support:
  - Government of Nepal
- Technical Support:
  - Government of Japan via Japan International Cooperation Agency (JICA)
  - *Project on Capacity Development for Implementation of Economic Census 2018 of Nepal (2016-2021)*
  - Statistics Bureau of Japan



# 3. Sectoral Coverage : ISIC revision 4-2008

- **Section-A: Agriculture, forestry and fishing (Registered Establishments Only)**
- **Section-B: Mining and quarrying:**
- **Section-C: Manufacturing**
- **Section-D: Electricity, gas, steam and air conditioning supply**
- **Section-E: Water supply; sewerage, waste management and remediation activities**
- **Section-F: Construction**
- **Section-G: Wholesale and retail trade; repair of motor vehicles and motorcycles**
- **Section-H: Transportation and Storage**
- **Section-I: Accommodation and food service activities (hotel and restaurant)**
- **Section-J: Information and communication**
- **Section-K: Financial and insurance activities**
- **Section-L: Real estate activities**
- **Section-M: Professional, scientific and technical activities:**
- **Section-N: Administrative and support service activities:**
- **Section-P: Education**
- **Section-Q: Human health and social work activities:**
- **Section-R: Arts, entertainment and recreation**
- **Section-S: Other service activities**

### 3. Some Major Contents of Census Questionnaire

- *Introductory and Area Information of the Establishment*
- *Registration status, legal status of registered, ownership status*
- *Business characteristics and operation information*
- *Employment,*
- *Major economic activity,*
- *Head office information,*
- *Accounting record status,*
- *Revenues/expenditure / compensation of employees status,*
- *Capital information,*
- *Access for credit,*

## 4. ICT Policy of Nepal

- **Constitutional Provision of ICT in Nepal**
- In Development Policy of “Constitution of Nepal” it is stated that
  - Developing and expanding Information Technology as required by the nation, and making its access easy and simple by general public, while also making its maximum use for national development.

## 4. ICT policy of Nepal ....

- Government of Nepal has formulated ICT policy 2015.
- ICT is placed at the core of strategies aimed at securing the goals of sustainable development and stimulating economic growth.
- Government of Nepal has accorded high level of policy emphasis for the development ICT sector.

## 4. ICT policy of Nepal

- **Vision:** Transform to Information and Knowledge based Society with the use of ICTs
- **Mission:** To achieve the goals of governance, sustainable development and poverty reduction with the utilization of ICT
- **Major Objectives:**
  - Access for all on ICTs and affordable
  - Sustainable, wide and inclusive development with the use of ICTs
  - ICT infrastructure development and expansion
  - Promote to utilize ICT in various sectors
  - Promote governance via ICT utilization

# ICT policy of Nepal ....

- Some major policies (21):
  - Promoting public access and content development
  - Expansion in rural and remote areas
  - ICTs in education, research and development
  - **ICT in Governance and providing services**
  - **Promote cloud computing (GIDC)**
  - Building confidence and security in the use of ICTs

# ICT based Some Major Statistical Operations

Statistical Operations	Mode of ICT Use
Population Census 2011	Publicity, Training, EA mapping, Modern software (CSPro) used for data entry, Web based data dissemination
Agriculture Census 2011/12	Publicity, Training, Modern software (CSPro) used for data entry, Web based data dissemination
<b>Earthquake Affected Household Registration for Housing Reconstruction Program 2015</b>	<b>Publicity, Training, CAPI (Tablet) used for Data Collection from affected households</b>
Nepal Labour Force Survey 2018	Tablet Based data collection, Web Dissemination of the survey results
Nepal Multiple Indicators Cluster Survey 2018	Tablet based data collection
<b>National Economic Census 2018</b>	<b>PAPI, CAPI, CAWI Application</b>



## 5. Utilization of ICT in National Economic Census 2018 (NEC2018)

- Motivation
  - ICT policy
  - Global Increasing Trends of Using ICT in many aspects
  - Experiences achieved from some statistical operations
  - Introduce ICT oriented data collection system/  
Technological Advancements
  - Explore cost effective way of data collection in sustainable way
  - Technical Cooperation from JICA via Statistics Bureau of Japan : Capacity Development Programs

# 5. Utilization of ICT in National Economic Census 2018

- **A. Pre-census phase**
  - Pilot Survey
  - EA Mapping
- **B. Census enumeration phase**
  - Publicity
    - SMS, Radio, Internet, television
  - Data Collection
    - CAPI and CAWI
  - Monitoring and Supervision
    - Communication with Field Officials via mobile phone
    - Dash board system
- **C. Post Census Phase**
  - Decentralized data processing system
  - Census Result Dissemination

# 5-A. Utilization of ICT in NEC2018: Pre-census Phase

## • Pilot Survey

- Conducted in 66 Districts via 33 District Statistics Offices of CBS
- Two phases: Listing and Main Data Collection

## • Application of CAPI

- Use of Tablet

## • Application of CAWI

- E-census based data collection
- Brief instruction notes to users for online registration

## • Lesson Learnt:

- Confidence to utilize ICT
- Bugs improved in main economic census
- ICT applications improved

Mode of Data Collection/Entry	Frequency	Percent
Paper/ Desktop	1217	17.5
Tablet	5715	82.1
Online	30	.4
Total	6962	100.0

## 5-A. Utilization of ICT in NEC2018: Enumeration Area Mapping

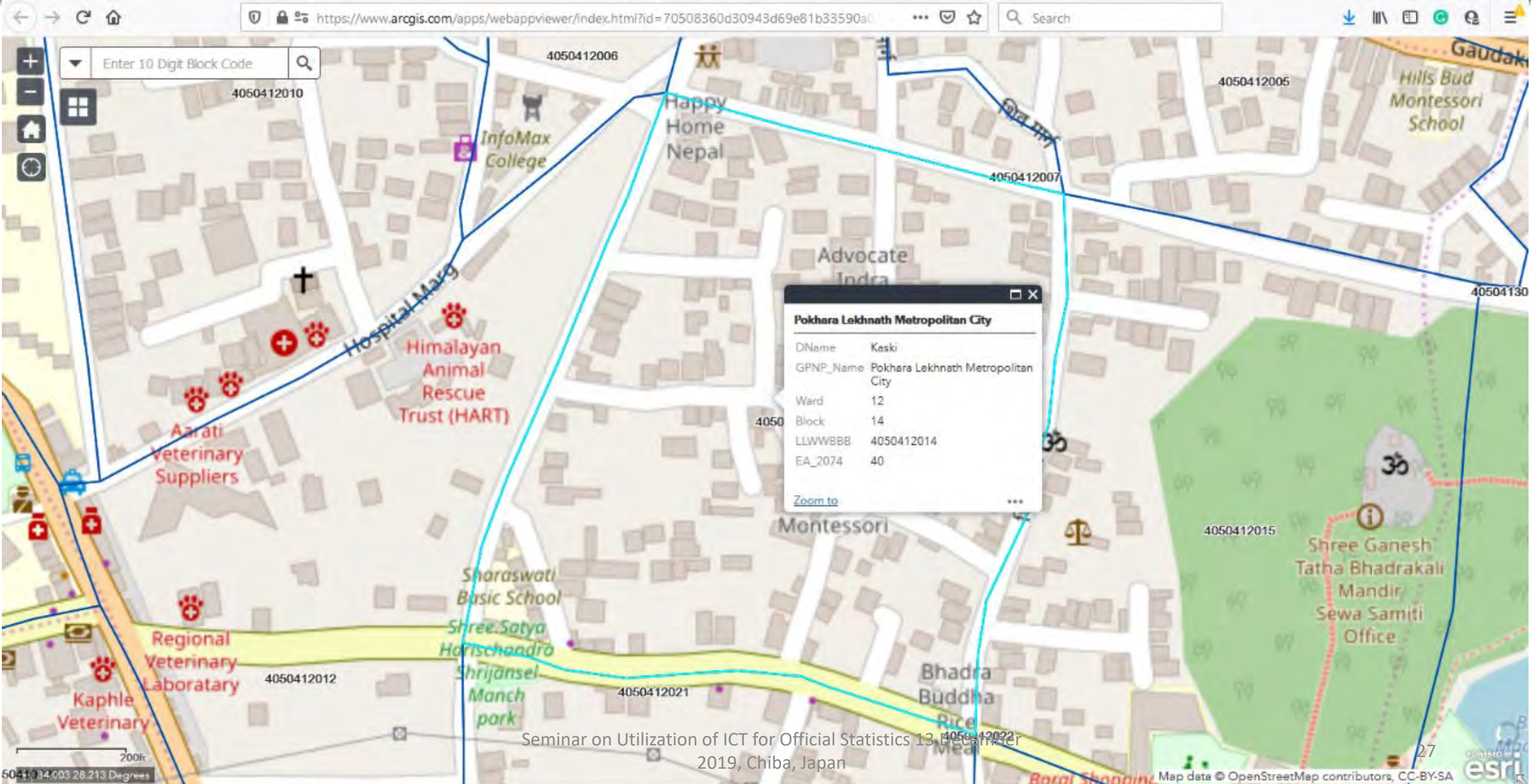
- **Enumeration Area Mapping**

- Use of ArcGIS software
- Use of Satellite images of major municipalities and use of Google Earth Image
- Digital version of EA maps prepared and distributed to District Census Offices
- Web based EA maps

<https://www.arcgis.com/apps/webappviewer/index.html?id=70508360d30943d69e81b33590a03653&extent=-9351619.7261%2C3275919.3259%2C9352670.7352%2C3276551.1257%2C102100>



# 5-A. Example of Web-based EA Maps for Economic Census 2018



## 5-B. Utilization of ICT in NEC2018: Census Enumeration Phase

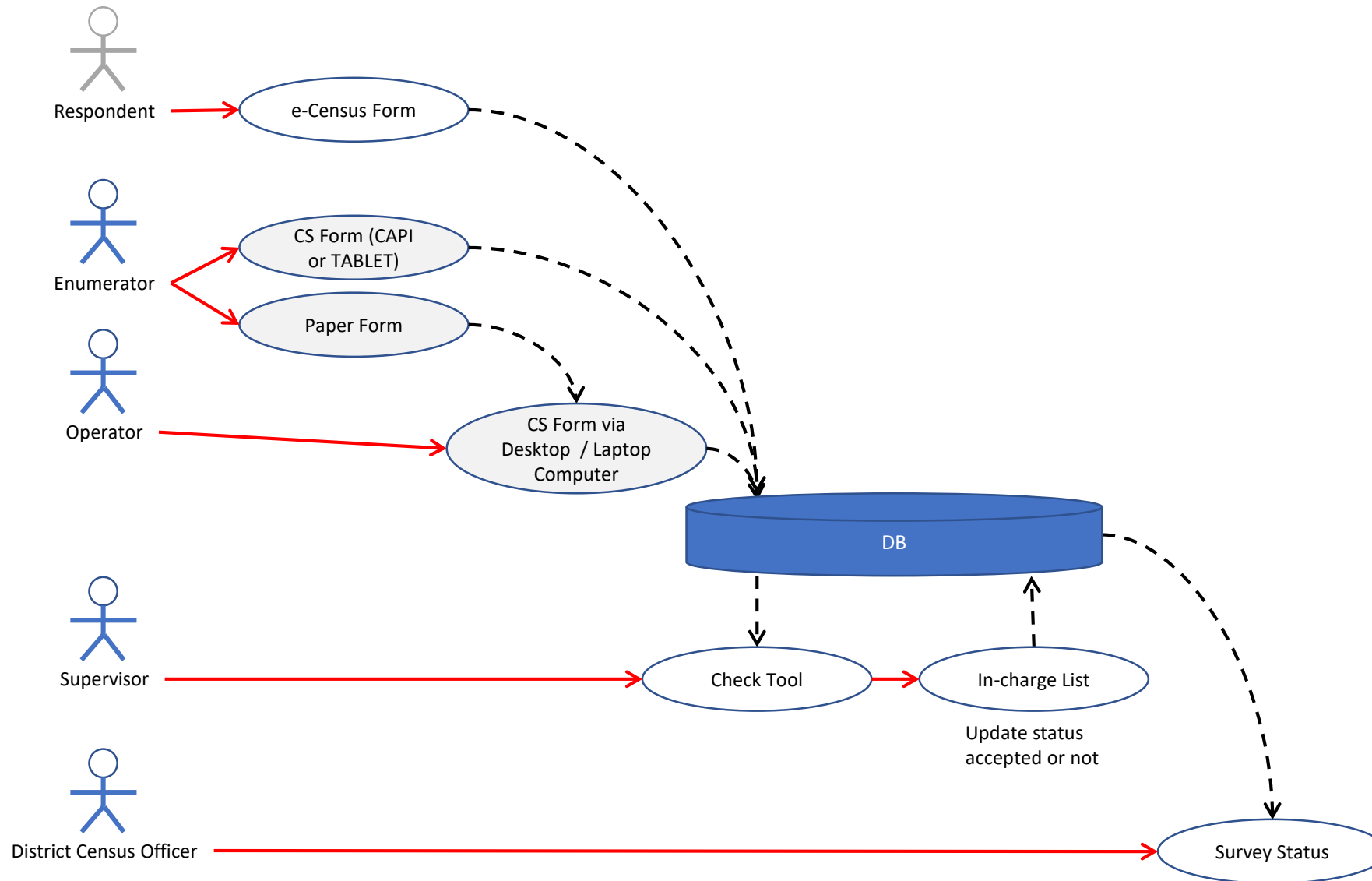
- **Publicity/ Media Campaigning**
  - Use of SMS to respondents
  - Use of Website (Release of press notes and notices, YouTube, Social network)
  - Broadcasting Radio Jingles via Radios
  - Broadcasting Visual advertise via Televisions







## 5-B. General Concept on Work Flow of Data Collection Approaches in NEC 2018



# 5-B. Three Approaches of Data Collection ...

- **PAPI:**

- Traditional Paper based questionnaires (829,557 establishments or 89.84%)

- **CAPI:**

- Tablet computer (87,913 establishments or 9.52%)

- **CAWI:**

- e-census (online census: 5,886 establishments or 0.64%)

- *PAPI: Paper Assisted Personal Interview ; CAPI: Computer Assisted Personal Interview; CAWI: Computer Assisted Web Interview*

- **Total Establishments= PAPI + CAPI +CAWI =923,356**

## 5-B.1-CAPI system in NEC 2018

- ◆ Introduce Tablet Computer to Enumeration
- ◆ Distribute a tablet computer to some enumerators, and enter responded forms and submit them through Economic Census application.
- ◆ Tablet computer is able to reduce the workload and costs for data processing mainly data entry.
- ◆ It is possible for some enumerators to use EA map and other maps on tablet computer.
- ◆ Reduce the workload and costs for the printing of EA maps and other maps.

# 5-B.1: Brief Description of CAPI Application

- **Android Platform**
  - **Data entry**
  - **Synchronize Module**
    - Update Survey Application
    - Upload data (Data Transfer)
- **Backup system**
- **Data Entry Module**
  - Contains Questions of Economic Census
  - Face-to-Face Interview with the Respondent
  - Answers noted in CAPI via Data Entry mode



## 5-B.1- Brief Description of CAPI Application ...

- **Synchronization Module: Upload data and Update Application**
  - Need Internet Access to Send Data after completion of interview
  - Can be sent data in bulk as internet connectivity is accesses.
  - To update Data Entry Application while in operation via Server system
- **Backup Module**
  - Incase of unavailability of internet connectivity, need to back up data in harddisk of tablet
  - Backup option available in Tablet





# 5-B.1: CAPI System in NEC2018



- **CSPro 7.1/ 7.0/6.3** (CSEntry Android Application)
- **Economic Census** Data Entry Application
- Using **Synchronization** : Data Submission to Server (<https://nc.gcloud.gov.np>)

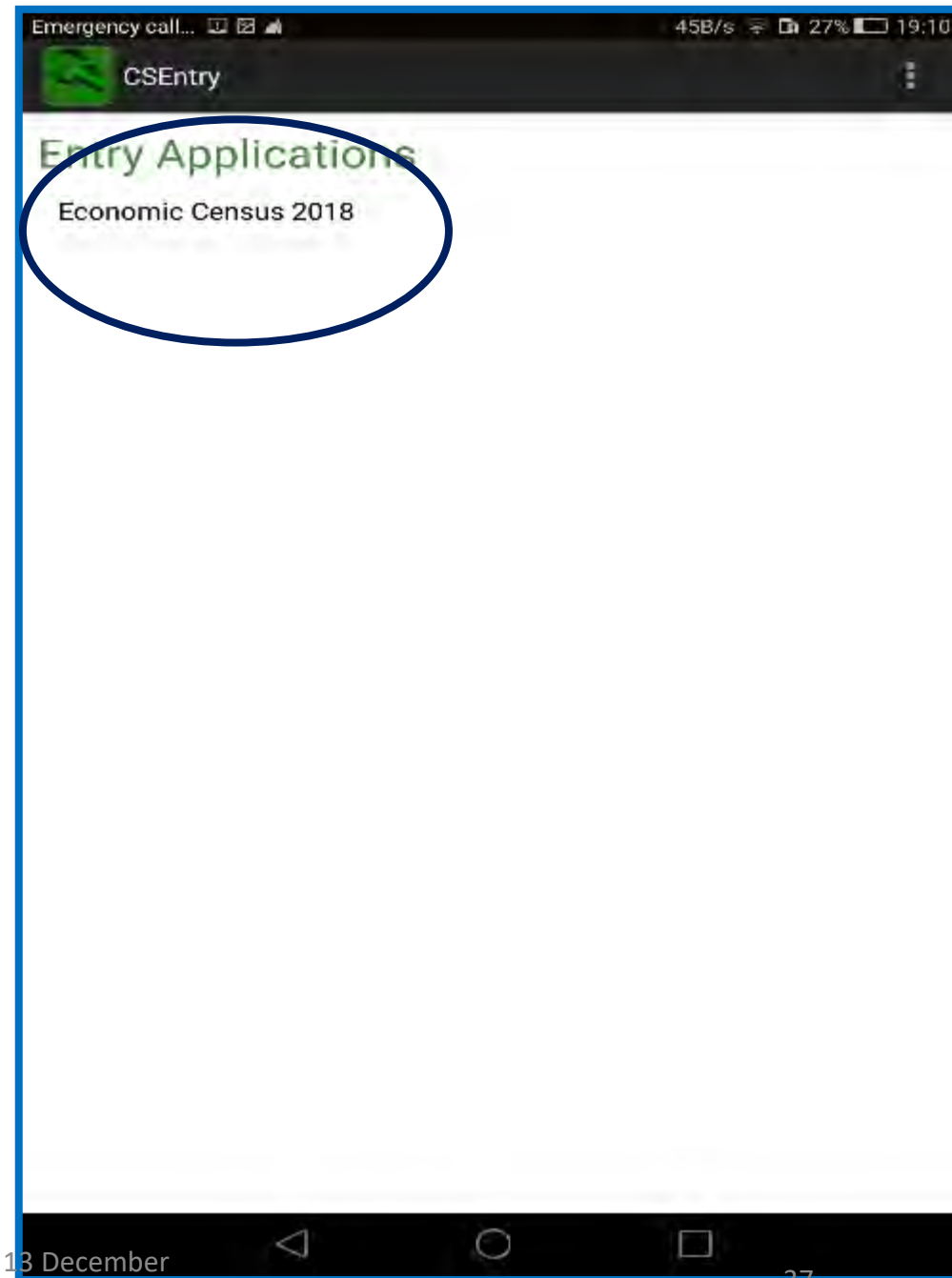
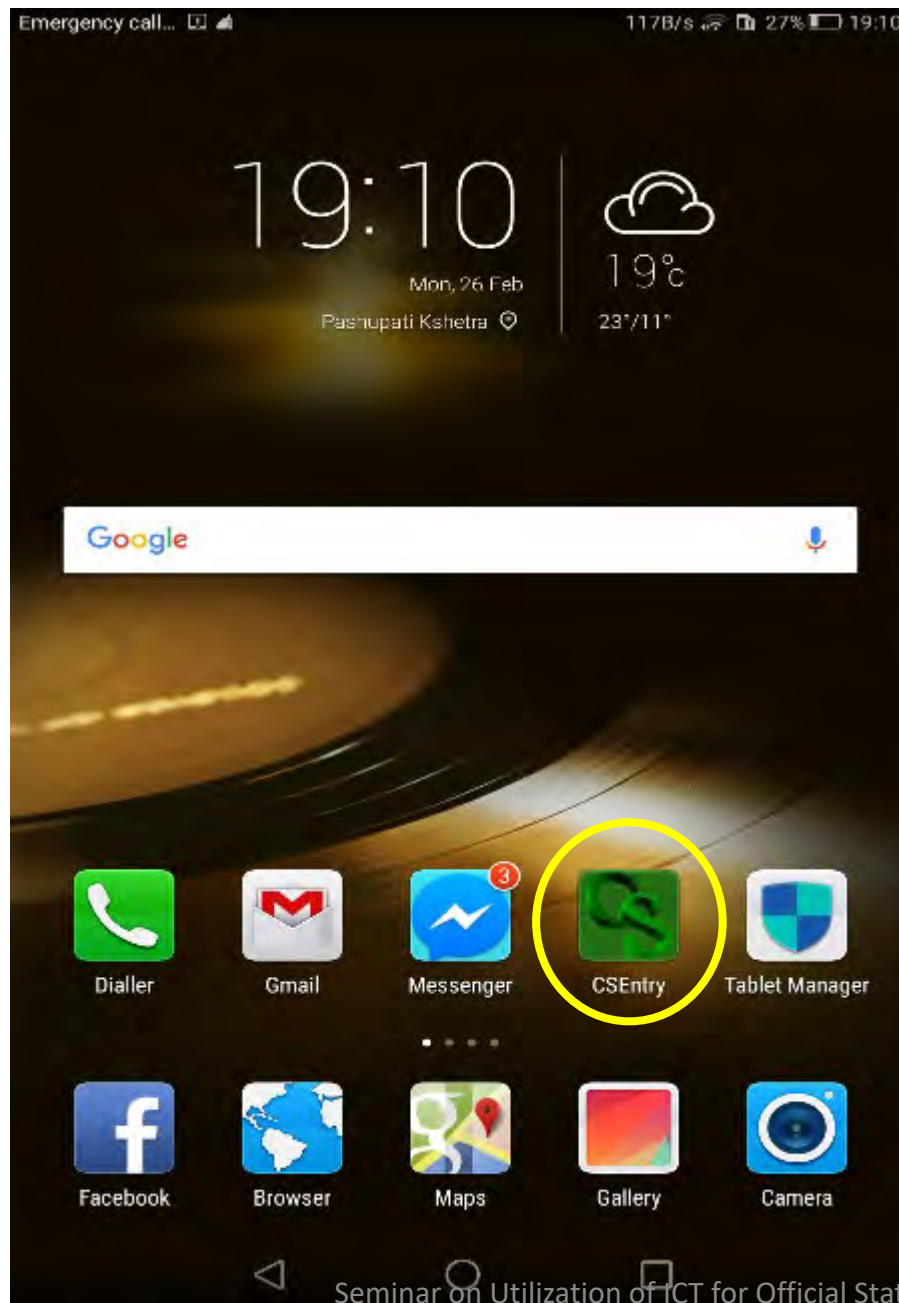
- Mainly Kathmandu Metropolitan City (78853)/175 Tablets
- 14 Districts

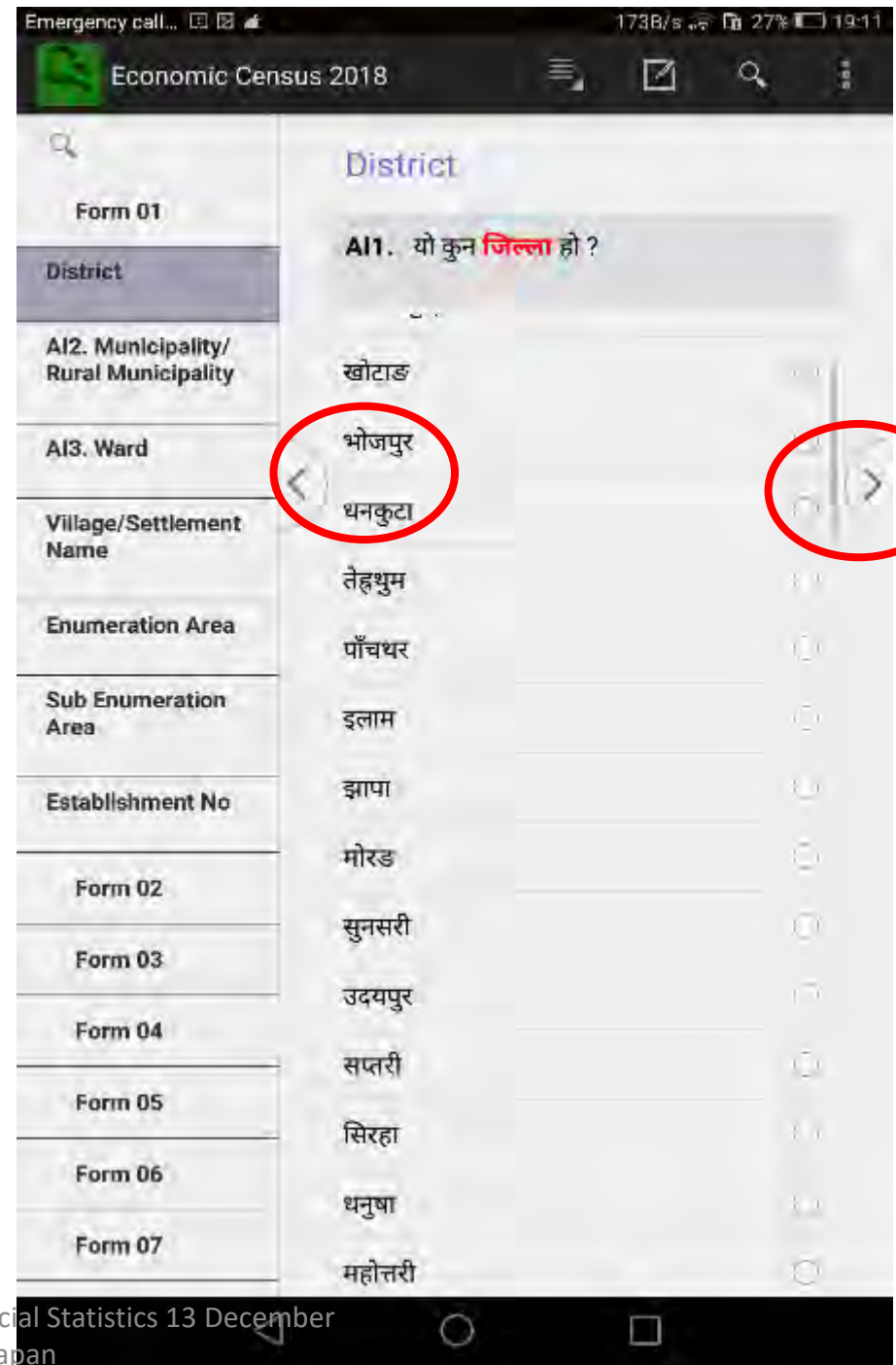
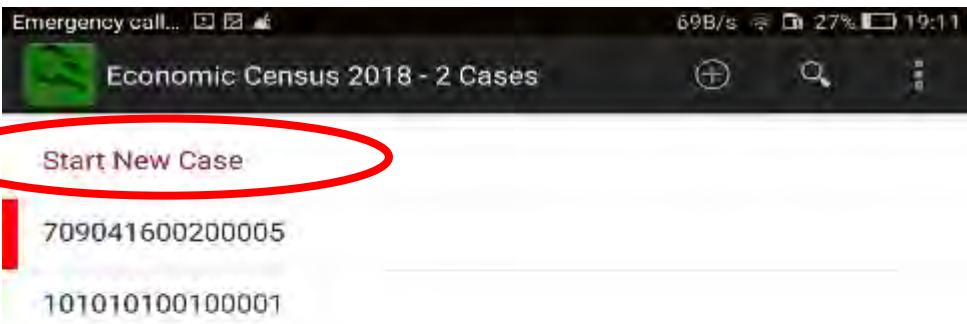




**Android  
Tablet/Mobile**

**Better features (RAM,  
ROM, CPU) better  
performance**





# 5-B.1:-Data upload and Synchronization

- Provision of data upload mechanism in Tablets
- Connection to Server at Government Integrated Data Center (GIDC)
  - CBS server
  - Kathmandu Server

