Cambodian National Institute of Statistics: use of GSBPM

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Statistical business process model

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The National Institute of Statistics (NIS) is responsible to produce official statistics from the three censuses (Population Census, Economic Census and Agriculture Census) and various surveys such as Cambodia Inter-censal Population Survey, Cambodia Inter-censal Economic Survey, Demographic Survey, and Health Survey and Socio-economic Survey etc. The data quality of these censuses and surveys are very important for publishing the report and for policymakers. To achieve statistical quality from these censuses and surveys, NIS implements Cambodia Generic Statistical Business Process Model (GSBPM) for censuses and survey as described in Figure 1. There are 7 steps for NIS Cambodia Generic Statistical Business Process Model (NCGSBPM): Plan, Collection, Process, Analyze, Dissemination, Archive and Evaluate.

Figure 1: NIS Cambodia Generic Statistical Business Process Model

NIS Cambodia Statistical Business Process Model

Quality Management/Metadata Management

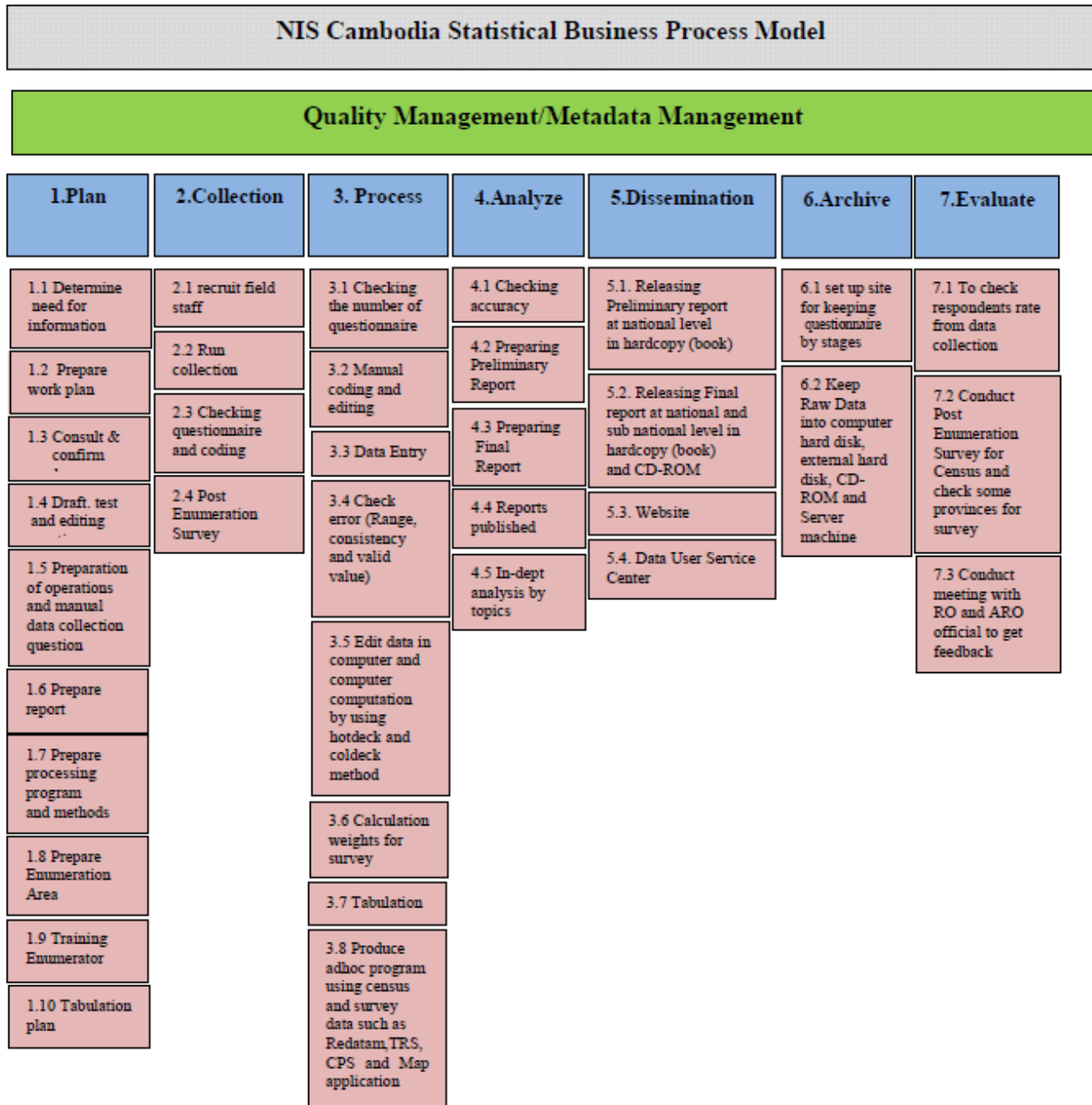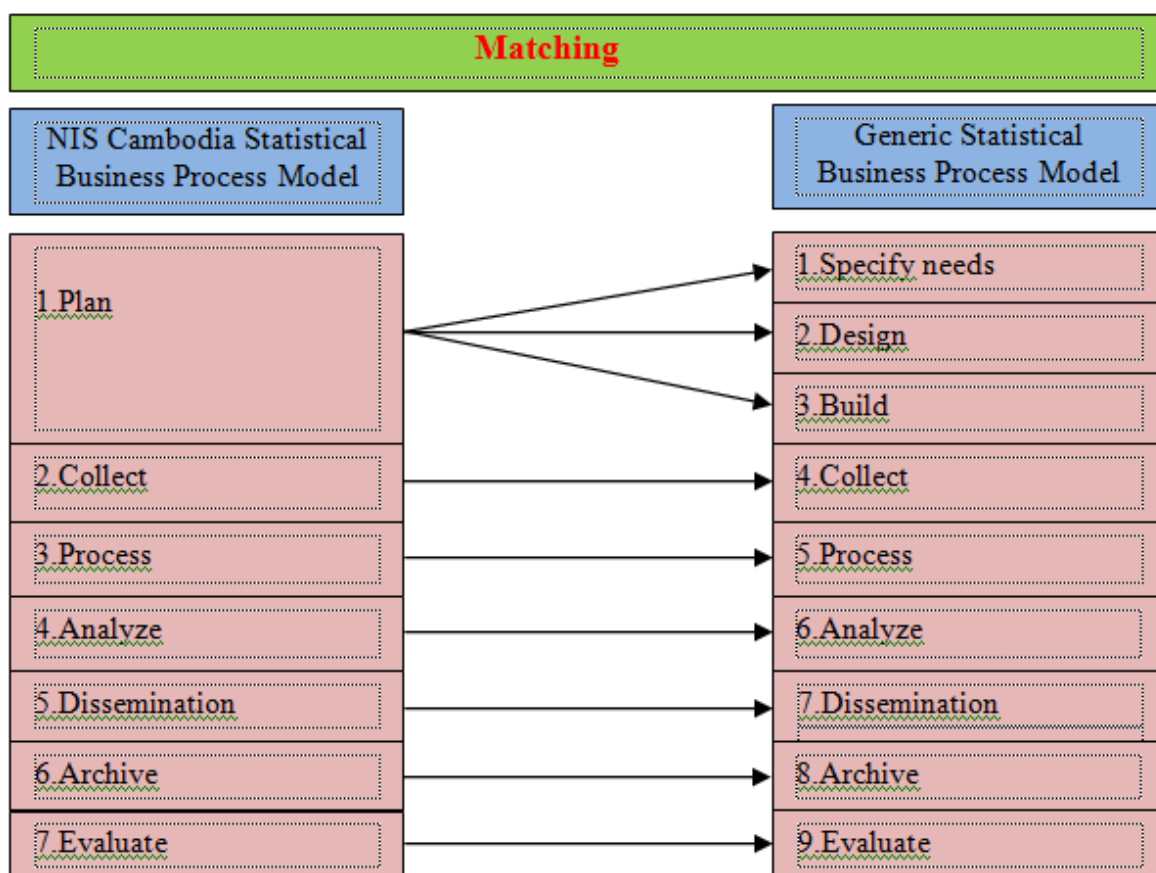| 1.Plan	2.Collection	3. Process	4.Analyze	5.Dissemination	6.Archive	7.Evaluate
1.1 Determine need for information	2.1 recruit field staff	3.1 Checking the number of questionnaire	4.1 Checking accuracy	5.1. Releasing Preliminary report at national level in hardcopy (book)	6.1 set up site for keeping questionnaire by stages	7.1 To check respondents rate from data collection
1.2 Prepare work plan	2.2 Run collection	3.2 Manual coding and editing	4.2 Preparing Preliminary Report	5.2. Releasing Final report at national and sub national level in hardcopy (book) and CD-ROM	6.2 Keep Raw Data into computer hard disk, external hard disk, CD-ROM and Server machine	7.2 Conduct Post Enumeration Survey for Census and check some provinces for survey
1.3 Consult & confirm	2.3 Checking questionnaire and coding	3.3 Data Entry	4.3 Preparing Final Report	5.3. Website		
1.4 Draft. test and editing	2.4 Post Enumeration Survey	3.4 Check error (Range, consistency and valid value)	4.4 Reports published	5.4. Data User Service Center		7.3 Conduct meeting with RO and ARO official to get feedback
1.5 Preparation of operations and manual data collection question		3.5 Edit data in computer and computer computation by using hotdeck and coldeck method	4.5 In-dept analysis by topics			
1.6 Prepare report		3.6 Calculation weights for survey				
1.7 Prepare processing program and methods		3.7 Tabulation				
1.8 Prepare Enumeration Area		3.8 Produce adhoc program using census and survey data such as Redatam,TRS, CPS and Map application				
1.9 Training Enumerator						
1.10 Tabulation plan						

Figure 2 shows the between NIS Censuses/Surveys Business Process Model and the first level of GSBPM. From the figure, the Plan in NIS is matched to Specify needs, Design and Build defined in GSBPM, while other are the same with GSBPM.

Figure 2: NIS Cambodia Generic Statistical Business Process Model and GSBPM 5.0

Metadata used/created at each phase

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The NIS has conducted three censuses and other surveys based on statistical law and follow the 7 phases since 1993 until now. The 7 phases are described below:

1. Plan

The planning phase contains all the three elements: i). Specify need, ii). Design, and iii). Build. Every census/survey is well planned in consultation with stake holders and users and the objectives are clearly specified in the Plan document along with the design and work plan.

1.1. Specify need

In the preparation phase for the censuses/surveys, the Royal Government of Cambodia issues the sub-decree authorizing the census/ survey operations and NIS prepares the census/survey Plan that includes budget details, methodology and work plan for censuses/surveys. In this stage, two meetings are conducted. The first meeting is resource mobilization meeting with development partners to find the resources for conducting the census /survey and second meeting is with stake holders and data users with participation from government institutions and National and International organization. At the second meeting the requirement and use of metadata concerned is discussed to know what kind of metadata is needed.

1.2. Design

After checking that enough funds are available for an operation, the questionnaire is designed with manual instruction for enumerator and supervisor. The data processing plan including data entry program, data editing and tabulation has been prepared based on the questionnaire. The application for census and survey is based on what the project used or followed from the beginning such as population census and Agricultural Census used CSPro, Economic Census used Microsoft Access and Socio-economic Survey used Visual Basic with SQL Server. The CamInfo and CensusInfo adopted from DeveInfo contain the metadata template and NADA is also the metadata description to describe about the census/survey methodology. The site for keeping the questionnaire received from the province has been set up in this phase.

1.3. Build

The draft questionnaire form designing has been tested in the field to know that this questionnaire can be used or not for actual operation. The program testing has been done such as program for data entry, editing and tabulation to know that this program is working correctly and will fit with system and computer requirement.

2. Collect

The National Institute of Statistics, Ministry of Planning is still using face to face for data collection to get information except the metadata is sent from line ministries via email.

3. Process

In this phase, coding/editing and data entry using CSPro, Microsoft Access and Visual Basic with SQL Server is implemented in time. The metadata collected from line ministries is input into CamInfo, CensusInfo and NADA. The methods for data editing such as colddeck and hotdeck are used. For missing data imputation is made. Statistical Tables are produced after checking and ensuring that they are free from error.

4. Analyze

The core information from the census and survey is analyzed for preparing the final report. This followed by in-depth analysis by topics based on the census and survey. During 2008 Population Census, 14 topics were analyzed such as: i). Fertility and Mortality, ii). Spatial distribution and Population Growth, iii). Sex and Age structure, IV). Nuptiality, v). Disability, vi). Migration, vii). Literacy and Educational Attainment, viii). Economic Activity and Employment, ix). Commuting, x). Housing and Household amenity, xi). Family and household, xii) Population Projection, xiii). Gender in Cambodia, and xiv). Urban development in Cambodia. The metadata, collected from the line ministries, are compared with other sources and explained to avoid confusion.

5. Dissemination

The results from Census/survey are disseminated at national and sub-national levels. There are three kinds of data dissemination: *i)*Distributing the reports published in hard copy to line ministries and international organization, *ii)*.Conduct workshops at national and sub-national levels and *iii)* Producing electronic products containing data off-line and on-line. The tools for data dissemination are as follows:

- CamInfo system is the tool for producing table, graph and map. It contains many indicators from various sectors. It has been implemented since 2003 and is supported by UNICEF.

- CensusInfo is the tool for producing table, graph and map. It contains demographic indicators from the population Census and Inter-censal Population Survey. It has been implemented since 2012 with UNFPA support,

- NADA is data repository from census and survey and it has been implemented since 2010

- Redatam+SP is a software package developed by CELADE and the United Nations Population Division for Latin America and the Caribbean, based in Santiago, Chile. It allows data users to access censuses and other database sources very easily, quickly, and for any geographical area.

- The Community Profile System (CPS) was developed to provide easy access to a range of demographic and socio-economic indicators (mostly in terms of rates and ratios), together with a number of basic counts such as population by sex and five-year age groups. These profiles can be generated for all geographical areas in the country, i.e. for all Villages, the smallest geographic building block in the census hierarchy, as well as for Communes, Districts, Provinces and the Country itself.

- The Table Retrieval System (TRS) was primarily developed to easily select, retrieve, display, print and copy the statistical tables from population census and survey data. It is intended as a tool for electronic data dissemination. TRS allows data users with no previous computer experience to examine tables and accompanying text which are stored in a computer readable format. For Cambodia Inter-censal Population Survey 2013, The CPS and TRS were combined together so that data users can retrieve data from them.

- The map layer and database is the one product for data dissemination after releasing final results of Population Census 2008 and this product is intended for data users who have access to and are proficient with GIS software packages. It consists of a series of map layers and associated databases with aggregated counts, ratios, and rates.

6. Archive

The filled-in questionnaires are preserved in the archive room safely for an appropriate period. The final data files are   kept in different locations such as external hard disk computer, CD-ROM and server machine so as to avoid losing.

7. Evaluate

For evaluation of the census/survey, the National Institute of Statistics (NIS) had invited Regional and Assistant Regional officers from provinces and in NIS to report about problems met during the census/survey and for updating the next census/survey. Another evaluation methodology in the population census was the conducting of Post Enumeration Survey (PES) in selected sample enumeration areas to assess the coverage and content errors in the field work. PES was not done for the surveys. Other evaluation techniques using administrative information and comparison with other sources of data were also adopted.

Metadata relevant to other business processes

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- CensusInfo is the tool for producing table, graph and map. It contains demographic indicators from the population Census and Inter-censal Population Survey. It has been implemented since 2012 with UNFPA support. This tool is adopted from DeveInfo software.

- CamInfo system is the tool for producing table, graph and map. It contains many indicators from various sectors. It has been implemented since 2003 and is supported by UNICEF. This tool is also adopted from DevInfo similar CensusInfo and the most of indicators related to Millennium Development Goal (MDG)

- Redatam+SP is a tool contain population data from 1998 and 2008 Population Census. This software package developed by CELADE and the United Nations Population Division for Latin America and the Caribbean, based in Santiago, Chile.

- The Community Profile System (CPS) is a tool contains the core indicator from population census data. This tool was written from CSPro software.

- Table Retrieval System (TRS) is a tool for retrieving table from 1998 and 2008 Population Census and Cambodia Inter-censal Population Survey 2013. This tool was written from CSPro contain the priority table from 1998 and 2008 Population Census and Cambodia Inter-censal Population Survey 2013 data.

- The map layer and database is the one product for data dissemination after releasing final results of Population Census 2008 and this product is intended for data users who have access to and are proficient with GIS software packages. It consists of a series of map layers and associated databases with aggregated counts, ratios, and rates. The user need to install ArcInfo or ArcView software to open this layer.

Lessons learned

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The staff members who are involved in these works have received training from experts and actual practice from the beginning. However, the training is still required based on new technology update.

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Links:

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Attachments

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