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Brief Notes on Some Features of the 2000 Indonesia's Population Census and Improvements for 2010 Population Census

1. Introduction

In Indonesia, according to the Statistics Law, BPS-Statistics Indonesia is responsible for conducting three censuses which one of them is population census. Technically, the implementation of the population census project is the responsibility of the Directorate of Population Statistics. However, since the population census project is a very large project, other directorates within BPS organization are also involved in various activities. In regional level, BPS branch offices in provinces and districts are in charge of field operations including recruitment and training of enumerators in close cooperations with heads of each administrative level.

Since 1961 BPS has carried out population census every ten years. The last Population Census was conducted in 2000 and the 2010 Population Census will be the sixth. Comparing the procedure of the 2000 Population Census to the other population censuses previously taken by BPS, a great progress had been achieved in various stages of census activities, starting from planning, execution, processing, and dissemination. However, with the increasing demand for a better quality of population statistics, the problem of census taking has become more complex.

The main obstacle of census taking in Indonesia is the large number of population to be enumerated simultaneously, living in vast area and unequally inhabited. More than 60 per cent of the population live in Java with an area less than 7 per cent of the total land area of Indonesia, and the rest live in approximately 13,000 islands, scattered along the equator.

2. Planning

At the beginning stage of 2000 Population Census, BPS received technical guidance from the Interdepartmental Census Committee, which specially formed by BPS. This committee gave directions regarding the general objectives of the census. Later, BPS formed a Technical Team, consisting of experts of various disciplines, such as, demographers, sociologists, sampling specialists, and system analysts. BPS then prepared the master plan. Master plan is a detailed plan that would make the complicated project successful.

In terms of mapping, method of village mapping and formation of enumeration area were reviewed. In 2000 Population Census BPS decided to use census block as an enumeration area unit. In addition, due to some obstacles, BPS still used the sketch-map of village and census block instead of real-map of those things. Gradually after the census BPS scanned the sketch-maps, so that the paper-based sketch-maps became image-based sketch-maps.

The total number of field workers in the 2000 Population Census was about 500,000 persons. They were recruited and selected among teachers, students, and government officials from residents of the areas they were to be enumerated. These supervisors and enumerators were required to have at least finished high school, to be adult person with sense of responsibility, and to live in the assigned enumeration area.

The training of the field workers were carried out in several stages. The first stage was the training of Master Instructors that mainly consisted of members of the national Technical Team. The second stage was training of the National Instructors by the Master Instructors. The third stage was training of the Local Instructors by the National Instructors and finally the fourth stage was the training of field supervisors and the enumerators by Local Instructors.

3. Execution

In 2000 the Population Census and Housing Census are carried out simultaneously. This was the first time BPS conducted Housing Census. This census, using the L1 Form, collected data regarding the type of dwelling unit, building classification, occupancy status, and ownership status in one census block. Then, in the occupied building, this census collected data regarding the number of households and the number of household members lived there. Moreover, those who lived in the occupied building were also covered by the population census and were enumerated by using L2 Form.

Unlike the previous population census, the methodology of 2000 Population Census was complete count. There was no sample household. All of households were covered and all household members were enumerated by using L2 Form. It was intended that 2000 Population Census could provide population statistics up to smallest administrative area which known as small area statistics.

The variables included in L2 Form, however, were very limited. They were not as many as number variables included in usual long form. This condition made the number of consistency-checks were limited too, so that the rule of validation or computer-editing were very weak.

4. Data Processing

To process Population Census BPS was using OCR technology. (It is can be noted that besides used for 2000 Population Census, the scanners also be utililized for 2002 General Election Registration and 2003 Agriculture Census). However, due to the lack of data processing resources and time allocated, to capture data of Housing Census BPS was still using PC-based data entry.

The data processing was not only performed in BPS (Central Office) and province statistical offices but also done in district statistical offices. The L1 documents were processed in all district statistical offices and the data processing of L2 documents were done in BPS (Central Office), all province statistical offices and some district statistical offices in Java. Dealing with such new technology gave new experience to BPS staff, especially staffs in the regional offices.

There were two kinds of main documents to be processed, i.e. L1 and L2. L1 documents, housing census documents which included data of number of household members, were processed in two stages. The first stage was the processing of number of household members to get the preliminary figures of total population for each regional level and national level. The second stage was the processing of the rest of housing census items in L1. The data in both first and second stage was captured by data entry operators.

L2 documents were OCR-based documents and processed in data processing centers. All province statistical offices had to become data processing centers. District statistical office would become a data processing center if the number of documents in the district at least one million. Another consideration was these district statistical offices had enough data processing resources.

5. Dissemination

Result of 2000 Population Census were disseminated through several types of official publications, containing mostly statistical tables. The format and content of the publications using desktop publishing facilities were designed for different purposes and adopted to different background of data users.

BPS also published executive summaries, containing summary tables, graphs, and population, aimed to serve the need of executives who usually do not enough time to digest fat publication. Short explanation regarding methodology, concepts, and descriptive analysis of the tables are also presented in these publication. For customers that require a more specific or detailed statistical information, BPS accommodated them by providing made-to-order computer media.

On-line service was another way of population census data dissemination provided by BPS. The users could search the data in the BPS' web site or they could e-mail staffs in Directorate of Dissemination of Statistics who were in charge in this kind of service.

Now, with cooperation with JICA, BPS is implementing small area statistics. The 2000 Population Census data is one of several data that used in this on-going project. By using GIS the data in the smallest administrative area could be utilized extensively.

6. Problems

Some problems were encountered when conducting 2000 Population Census, which can be divided into technically and non-technically problems. Technically problems mainly were related to use of OCR scanners whereas non-technically problems, for instance, related to unstable condition in some area.

Quality of documents was the first problem due to printing defect that came from printing companies, such as incorrect position of the contents, error of drop-color, and tickness of paper. Other problems related with the quality of documents were the document condition when the documents came from the field. Some documents could not be processed because they were folded, stapled, or dirty.

The second problem was the quality of handwriting. Many of enumerators paid less attention when they wrote the questionnaires. They did not follow the instruction of "how to write the right characters" which caused the scanners recognized the handwritten characters wrongly. The bad quality of handwriting was also because of misusing the pencils. The pencils used by enumerators were HB type instead of 2B type or the pencils were not sharp.

The absence of scanner engineers in Indonesia made another problem. The engineers were only available in Singapore. Because of that when the scanners were out of order they could not be repaired soon.

7. Future Plans

Eventhough there were some obstacles in data processing using scanner, BPS would like to use this technology again. With the loan budget from the World Bank, BPS now is preparing to procure the machines, since most of the older machines cannot be used again. Also, that type of the scanner is discontinued so that the spareparts are not longer available.

GPS is the one of technology that will be used in providing proper maps, at least village maps. The Mapping Subdirectorate is the unit responsible in doing study intensivelyin this matter.

In monitoring the population census activities, particularly the data processing activities, BPS would utilized the web-based technology. Actually, this kind of technology was already used in 2006 Economic Census. It was very useful for the data processing community.

To obtain the preliminary figures of total population BPS would use the SMS method. A few of digits will be typed and sent by the fieldworker directly to data processing center or BPS (Central Office). In simple survey conducted recently using the SMS method proves that typing a lot digits make errors up to around 10%.

High performance computing (HPC) will be the technology used to speed up the bulky data processing. Now, this technology are being studied intensively. Also, BPS will implement virtual private network (VPN) to help the HPC works.

To make easy the system of data storage and data dissemination, also with the assistance of the World Bank, BPS would develop datawarehouse. This assistance will be the equipment, software, training, and prototype.