

# **Assessment of the Development of Land Information Systems in the Directorate of Land and Building Taxes Ministry of Finance Republic of Indonesia**

**SUBARYONO and LUKITO E. N., Indonesia**

**Key words:** land and building taxes, database, SISMIOP, SIGPBB

## **SUMMARY**

Type The Directorate of Land and Building Taxes, Ministry of Finance, Republic of Indonesia has developed SISMIOP (the Property Tax Information Management System) and SIG-PBB (Geographic Information Systems for Land and Building Taxes). SISMIOP was particularly designed to handle attribute data related to land and building taxes which now is managing around 84 million tax objects. On the other hand, SIG-PBB has been designed to manage spatial data of land and building tax objects. The two systems have been integrated allowing for query about land parcels and their associated attributes.

A research was conducted to assess the performance of those two systems in terms of their effectivity, efficiency, capacity, reliability, complexity, and the adaptability of the systems. Assessments were conducted not only directly to the systems which were centralized designed, but also in 33 (thirty three) Local Land and Building Taxes Service Offices where the systems were implemented. The research found that the two systems had different degrees of performances. While SISMIOP generally has reached the intended performance, SIG-PBB still needs improving in many aspects of quality LIS.

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## **1. INTRODUCTION**

The Directorate of Land and Building Taxes, Ministry of Finance (DoLBT), Republic of Indonesia has developed SISMIOP (the Property Tax Information Management System) and SIG-PBB (Geographic Information Systems for Land and Building Taxes). SISMIOP was particularly designed to handle attribute data related to land and building taxes which now is managing around 84 million tax objects. On the other hand, SIG-PBB has been designed to manage spatial data of land and building tax objects. The two systems have been integrated allowing for query about land parcels and their associated attributes.

SISMIOP and SIGPBB are an integrated information management system for property tax administration, designed under an informatic approach. It needs to be integrated because property tax administration is an extremely complex system, with many components that have different functions. The development of both SISMIOP followed a centralized design and construction of the systems and a decentralized implementation and operation strategy in which the systems are operated independently at each KPPBB. Both SISMIOP and SIGPBB were designed so as the systems can be accessed at any time by its users for data file updating procedures and information retrieval operations.

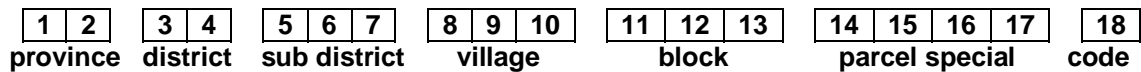
However, questioned can be raised including: (1) How do SISMIOP and SIG PBB operationally support DoLBT's management performance?, and (2) What are the factors that support and hinder the systems' functions to support the DoLBT's management. To respond these questions, a research was conducted with the following objective: (1) to assess the SISMIOP and SIGPBB technical performance including data acquisition, data processing, data presentation, distribution, and data maintenance.

## **2. SISMIOP AND SIGPBB STRUCTURE**

### **2.1 SISMIOP Structure**

SISMIOP has been structured as 6 identifiable modules that perform different functions, sharing a common data files. The modules include Basic Management, Valuation and Assessment, Tax Bill Production, Performance Monitoring, Information Retrieval, and One Stop Service. The core of SISMIOP is the property data file that stores basic available data for each individual property. The property data file is a set of interrelated data files linked by the unique property identification number (NOP). A property can be identified as the following (1) a land parcel without buildings, (2) one or more buildings without land (under

some special legal arrangements), and (3) a combination of land and buildings. The NOP structure can be shown as Figure 1.



**Figure 1.** NOP Structure

The first to 10th digits indicate codes of the administrative areas (Province, Kabupaten/District, Kecamatan/sub-district, and Kelurahan/Village/sub-sub district). The block code is the 11th to 13th digits, a while parcel is the 14th to 17th. The 18th is allocated for a special case such as common property or own by an individual. A block is usually defined by physical boundaries such as streets, canals or other relatively permanent or stable geographic objects. Both the boundaries and the block identifier is important to distinguished a block in a Kelurahan and to maintain and preserve the property identification within a block. Spatial data of property tax objects are organized in Block Maps and managed in SIGPBB. A block commonly contains approximately 200 or more properties.

## 2.2 SIGPBB Structure

SIGPBB or literally Geographic Information System for Land and Building (Property) Tax. The system is required to spatially represent and identify tax objects. Records of each tax object must be managed not only in SISMIOP but also in SIGPBB. In this system the tax objects are represented in digital spatial data which can be related with their associated attributes available in SISMIOP. In property tax administration implemented in each KPPBB, three sets of digital spatial data are managed in SIGPBB under three headings: (1) block map, (2) kelurahan map, and (3) ZNT map.

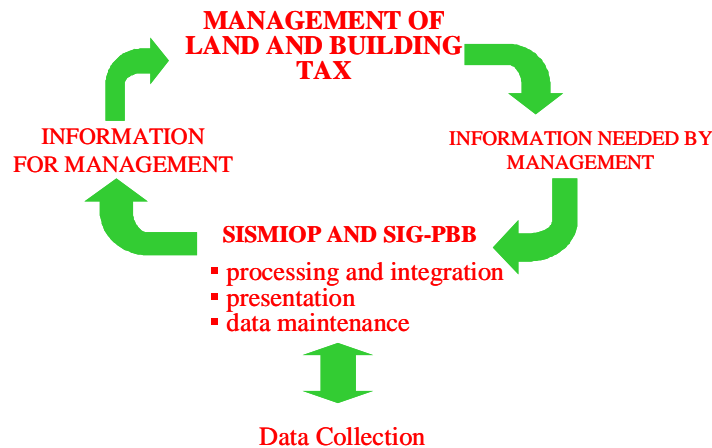
The first set is block maps which contain data about (1) block boundaries (path, river, roads, etc.), (2) tax object boundaries, (3) NOP of each tax object, and (4) block number and block number of surrounding area. The second set is kelurahan maps which present geographic boundaries and infrastructure details. This type of map also presents the current blocks and is used to support administration regarding property identification and land value in its relation with tax payers, local governments and other governmental agencies. The third set is ZNT (land value zone) map. The map shows geographical areas that are delineated into zones (ZNT) according to their land prices. A ZNT may extend into several adjacent block or conversely a block may contain more than one ZNT.

## 2.3 Linking SISMIOP and SIGPBB

Each parcel is unique so it must have unique identifier. No duplication exists. In this case NOP is used as the unique identifier to relate or link SIGPBB. However, since to date the systems have still been operated independently, problems often occur when for any reasons (division, acquisition, etc.) data in either SIGPBB or SISMIOP change, data inconsistency between the two systems may occur.

### 3. METHODOLOGY

This study focused on the assessment of SISMIOP and SIGPBB in supporting the management of the Directorate of Land and Building Tax and also their potential roles in supporting land management in general. In order to conduct its activities such as land valuation, imposing tax, monitoring, and other public services, the management of land and building tax obtains the data/information from SISMIOP and SIGPBB. Figure 1 shows the relationships between System Information (SIGPBB) and the management of land and building tax..



**Figure 1.** The relationships between System Information (SIGPBB) and the management of land and building tax.

To assess the systems, the study applied two principles (1) fulfillment of management needs, and (2) fulfillment of technical aspects. The management needs refers to the information needed for supporting tasks and daily activities in the Directorate Land and Building Tax and KPPBBs., which include collecting and processing tax related data, providing tax information, realizing tax potential, issuance of tax assessment, administering tax revenue, collection, and objection, Decision making processes including in the land and building tax management often face the imperfection of required information. Consequently, the management has to make a trade-off between the imperfect information and the prompt decision making. An ideal data quality standard is often lowered.

In terms of the technical aspects, the systems can be assessed through their effectivity, efficiency, capacity, reliability, complexity, controllability and adaptability, and cost of ownership. The technical aspects refer to systems' efficiency, effectiveness, capacity, reliability, complexity, adaptability, and cost of ownership. These characteristics are used to describe the subsystems which include data collection, data processing, information presentation and distribution, and data maintenance as well as system integration.

Surveys were conducted in 11 KPPBBs, 21 local government (cities and districts), in addition to the Directorate Land and Building Tax in Indonesia. Survey were conducted by conducting direct field observations to the systems, and questionnaires. The field observations included

the availability and quality of (1) data, (2) applications availability, (3) human resources, (4) hardware and software, and (5) infrastructure and financial resources.

## **4. RESULTS AND DISCUSSION**

### **4.1.1 Fulfillment of Management Needs**

The fulfillment of management needs was categorized according the types of the systems, i.e., SISMIOP and SIGPBB. The performance of SISMIOP that maintains attribute data is sufficient in supporting the management of land and building taxation, both in the central office and in KPPBBs. This can be indicated by the use of data available in the SISMIOP by the management in its activities such as land valuation, determination of tax amount for each tax object, revenue and its monitoring, and public services. SIGPBB, which maintains spatial data, in general is able to fulfill the current management requirement, this can be indicated by its capability in (1) visually identifying locations and boundaries of tax objects, (2) relating attribute data available in SISMIOP so that query can be performed both from SIGPBB and SISMIOP.

### **4.1.2 Fulfillment of Technical Aspects**

The results show that the effectivity, efficiency, capacity, and reliability of SISMIOP are high in all subsystems. These indicated that the systems has performed satisfactorily. SISMIOP showed high complexity which indicates that there are consequences in the system's maintenance and development. The higher complexity means the higher demands for qualified human resources and infrastructure. The high complexity in SISMIOP is unavoidable considering the large number of tasks that have to be accomplished. Adaptability level of SISMIOP varied for each subsystem. Data collection subsystem is at high level of adaptability. Subsystems of information presentation and distribution, and data maintenance fall in medium level of adaptability. Low level of adaptability was found in data processing. This because of the rigid database structure.

In contrast with SISMIOP, conditions of SIGPBB varies among KPPBBs. While SISMIOP shows high level of its effectivity, efficiency, capacity, and reliability, SIGPBB is in the range of medium to low. Reasons can be taken to explain this conditions. First, SIGPBB is still in the early development in which human resources and infrastructure are not yet sufficiently available in all KPPBBs. Second, the spatial data infrastructure – particularly the availability of geo-referenced ground control points in Indonesia varies from place to place.

### **4.1.3 Potential Added Values of SISMIOP and SIGPBB**

A large volume of data in both SISMIOP and SIGPBB, particularly SISMIOP, are maintained systematically in the database. Data about tax objects referred to land parcels are maintained in areas within the country present potential to support other activities external to the management of land and building tax. This includes urban and regional planning, land registration, infrastructure services, and other public services that their objects are related to

land parcels. In this case, NOP (property identification number) will play a significant role to be used as common identifier to integrate data available in different data sets and/or databases, which in turn, create interoperability among information systems developed by different institutions.

## **5. CONCLUSIONS**

SISMIOP has operationally functioned to support the taxation management at both central government level (Directorate of Land and Building Tax) and local level (KPPBB – Local Land and Building Tax Service office). Technically the system is capable of managing the data that get varied in types and become larger in volume. On the other hand, SIGPBB has not yet well developed. This is mainly because of the limited availability of the spatial data. Currently, the data are available in Java while in the outer island mostly available in big cities and main villages such as the capital of Kecamatan (Sub-district).

Hardware/software and procedures in both SISMIOP and SIGPBB has supported the effectiveness and efficiency in terms of time and resources for development such as training for human resources, provision of hardware/software, and also application modules development. As such, from the national perspective, the design of SISMIOP and SIGPBB facilitates controlling and monitoring mechanism nationally because of the high compatibility of data structure and classifications. Data of KPPBBs can be compared each other for benchmarking and/or integrated to rapidly identify the conditions of land and building tax in Indonesia.

However, local conditions related to the system development have been varied. While the regional autonomy is already in place, but they commonly lack of qualified human resources. This requires extra efforts, particularly central government assistance, to ensure the sustainability of the system development.

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