

Database for Determining the Market Value of Land Properties for Collateral Use

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Abstract: One appraisal company, PT. Bintang Dharma Hurip, already has land and residential data in Pekanbaru. However, many of the data were not organized in a database, which made the valuer's work more complex and time-consuming, particularly when determining the Reproduction Cost New (RCN). When researchers suggested a dynamic property database, determined the land's market worth, and used fuzzy queries to reduce loss and redundant data, the issue would be fixed. The study's goal was to compile a reference database application of Pekanbaru properties based on PT. Bintang Dharma Hurip's survey from the previous two years. Rapid Application Development, which includes phases for requirements, design, construction, and implementation, was the development strategy employed in the study. The program made use of Visual Basic 6.0 and the database tool Microsoft Access 2003. The study's output was a 6 MB database application. The three categories of the user's application are reviewer, valuer, and inspector. Three reviewers, two valuers, and one inspector, PT. Bintang Dharma Hurip, were asked by the researcher to test the application during the implementation phase. Researchers apparently came to the conclusion that the application is functioning well and meeting the needs of the organization based on the test results.

Keywords: Property, Market value, Fuzzy, Database, and PT. Bintang Dharma Hurip

I. Introduction

A professional appraiser is one of the occupations that are practiced in Indonesia. Like any other occupation, this one is less well-known to the general public. Enhancing the effectiveness of the national economy and safeguarding the public interest depend heavily on the profession, which includes professional appraisal. A person with the necessary training and experience to conduct the evaluation and who has been granted authorisation by the Ministry of Finance is employed in the public appraisal profession. According to Indonesia's Standard Assessment, assessment is the process of estimating an object's economic value and opinion. One appraisal firm, PT. Bintang Dharma Hurip, is situated in Pekanbaru and already possesses residential and land data, although the data is not kept in the shape of a computerized database, thus the researcher suggests a database application to streamline and expedite an appraiser's work. The purpose of the application was to provide a property transaction and to monitor and evaluate any data development. Land, homes, shops, gardens, factories, and automobiles are examples of these properties.

The researcher has created a database application that includes fuzzy query implementation for Reproduction Cost New (RCN), a dynamic property database, and a tool for determining the market value of land property. In essence, a database is a collection of data, typically arranged in a specific order. A database is a group of connected data that is kept outside of a computer and can be altered using specific software. Fuzzy logic is used by researchers for database applications since it is necessary for decision making. According to different research finding, fuzzy databases offer suggestions to academic supervisors on how to find out which field study students are interested in their support activities and ability evaluations. See fuzzy database. The decision to purchase an automobile is also supported by tahani. Researchers used a fuzzy database to calculate the RCN (Reproduction Cost New) figure for collateral purposes based on earlier research. According to a specific definition, value is the economic term that describes the price that is probably agreed upon by the buyer and seller of a good or service at a certain point in time. Value is a price that is expected to be paid for products rather than a fact or services according to a certain concept of value at a given moment. In contrast, the market is a setting where buyers and sellers exchange products and services using a price mechanism. Market value serves as a guide for banks and appraisers in establishing the value of collateral. The market value is also used to financial and sales data. Generally speaking, the market value can be used to calculate the worth of fixed assets [5]. The rights, interests, and advantages that come with ownership are all included in the

legal notion of property [5]. The property is made up of ownership rights that grant the owner a certain interest or a number of interests in their possessions. An adjective with the meaning "fuzzy".

II. Research Method

The data gathering method and the application development approach are the two components of the research methodology. Methods of gathering data are separated into field research and literature reviews. Rapid Application Development (RAD) is the application development methodology used in this study [8], [9]. The application to be developed is small-scale/medium and focusses on a specific scope, which is appropriate with PT. Bintang Dharma Hurip Appraisal, which is the reason to utilize RAD (Figure 1).

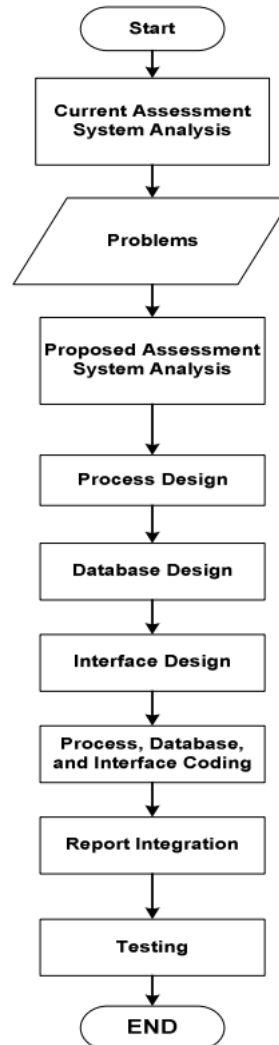


Fig 1: Research Flow

Analysis and Findings Researchers compare their work with similar studies before designing the application. There were inventory information systems (SIMBADA) and information system assets (SIMASET). These systems don't calculate asset value; they just show the asset inventory value. Because valuers frequently hesitate to determine the RCN value of residential properties, the proposed research could identify the variables required to calculate the market value of an asset or property, such as land even addition, by using fuzzy calculations. Based on related investigations, the researcher suggested a computer-based program to arrange comparison data in order to address issues there. The researchers next go on to the process design step, where they produce the suggested system flowchart,

context diagram (Figure 2), and data flow diagram, as well as a diagram of entity relationships. Tables for users, land object data, land object pictures, comparison data, property object data, property object pictures, building descriptions, adjustment tables, fuzz scoring tables, item fuzzy tables, and assignment tables are all included in the database design.

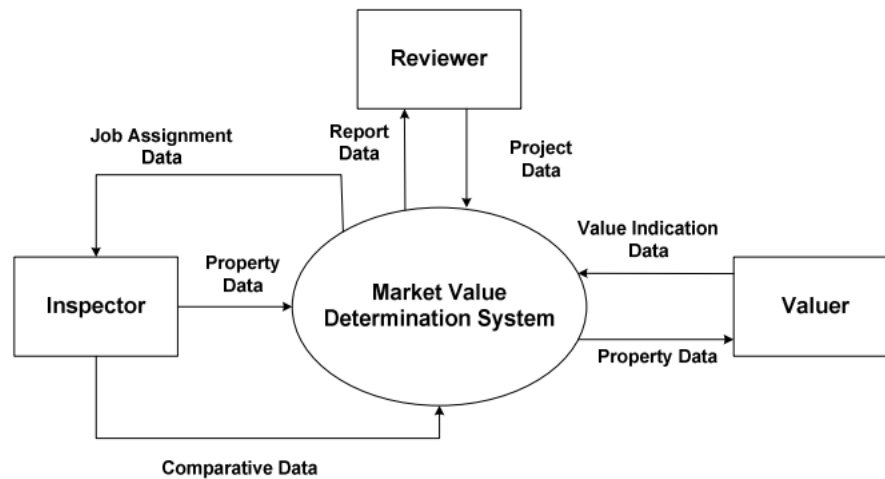


Fig 2: Proposed System Context Diagram

The market data technique was employed by the researcher. As long as the assets are supported by market data, the method can be used to any asset. In general, the techniques or strategies applied in the appraisal of real estate, businesses, and equipment. We employ a market data technique in this study. By comparing many sales and purchases of a similar and comparable asset that can be examined from a variety of characteristics, including location, legality, form type, and its usefulness depending on time, among many others, this approach may be implemented. By making proportionate adjustments, the disparity between their physical attributes and assets will be lessened when compared to the assets under evaluation. Each price's modifications will be determined by comparing it to the data that is already available. The asset value allows for the deduction of a conclusion. Time, offering data condition, location, land area, legal, land shape, road contours, and land contours are the characteristics employed for the adjustment variables. These variables, which are expressed as a percentage in rupiah, are connected to a measure of the land's value per square meter [5].

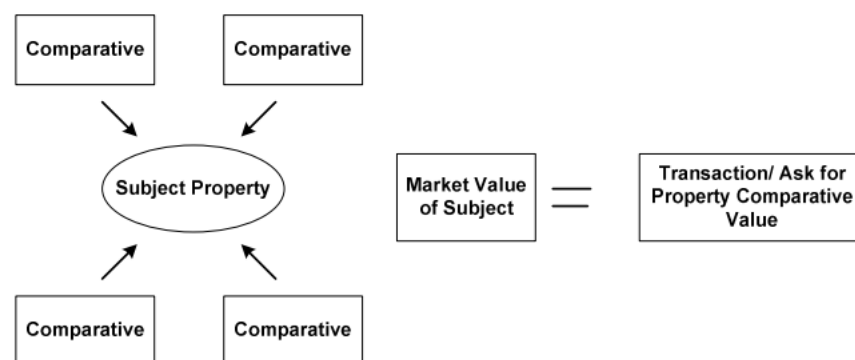


Fig 3: Approach of the market

The comparison data includes identification and its value, and the input system reflects the data demands related to the data assets that will be evaluated. A location, designation, distance from valued assets, distance from road access, data sources, data conditions, existing roads, land area, building area, legality, land forms, land contour, and conditions are all examples of identification. Its worth is determined by the land prices, discounts, and offers, as well as the proportion of assets adjustment elements of comparable data and an estimate of the land's value per square

metre. The valuer must enter criteria based on the provided variable in the fuzzy computation. For instance, if the variable chosen is roof, the valuer needs to enter the kind of roof that is utilised in conjunction with the score. The roof, floor, ceiling, walls, and sills are the fuzzy variables that are utilised. The valuer is required to provide the item's name when choosing fuzzy variables. The valuer can enter himself on the fuzzy variables form if there isn't an item that is used. For instance, if the fuzzy variable chosen is roof, the fuzzy item may be zinc, ceramic tile, metal roof, or any other material depending on the field conditions.

For properties like land, the market value is determined by a calculating procedure. If the land has already been filled in with the assets that will be evaluated on the form object, the process can proceed. Three comparative data points are required to determine the land's market worth. The comparison form must be filled up with the comparative data that will be used. The valuer can use comparable data to determine what information is needed and then incorporate it into the adjustment computation procedure. The form ID of the assets being valued and the comparison ID used for that purpose will reveal the asset ID and any modifications. Here, a value comparison indication is obtained by adjusting the comparative data parameter with assets. The comparison value indication will serve as a standard by which to measure the market worth of the assets under consideration. We must first ascertain the member degree (μ), also known as the membership function, before calculating it. This curve displays the locations at which input data is mapped into an interval with a membership value ranging from 0 to 1. A function approach is one method that can be utilised to get the membership value.

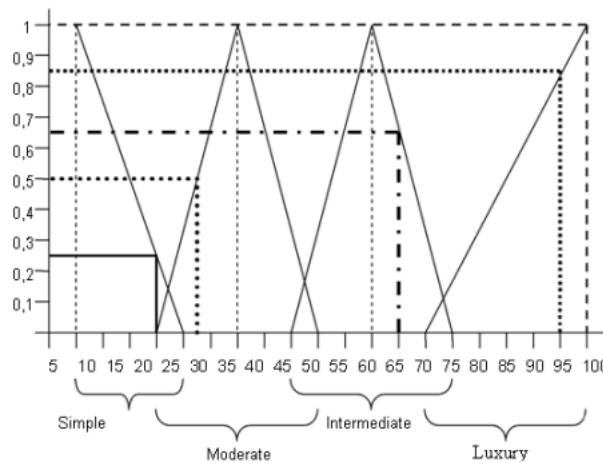


Fig 4: Domain Fuzzy Set

III. Conclusion

In order to facilitate data input and operation for the inspector and valuer, the program will maintain data in an organized database format using Microsoft Access 2003 and Visual Basic 6.0. Up to three identical goods are required in order to determine the market worth of the comparison data. Comparative land values are shown by dividing the anticipated land price by the total land area. Following that, the data might be modified for comparison with the assets under consideration. Following the adjustment process, the total weight data from the third comparative data will show the market worth of the land/m² of the assets under consideration. The valuer to calculate the RCN value (Reproduction Cost New) by taking into account the house's roof, floor, ceiling, walls, and frames. To test the application, three reviewers, two valuers, and one inspector, PT. Bintang Dharma Hurip, participated. Researchers apparently came to the conclusion that the application is functioning well and meeting the needs of the organization based on the test results.

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