Computer Assisted Mass Appraisal(Cama) Application For Property Tax Administration Improvement in Malaysia

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ABSTRACT

Property tax is one of the most important source of income for local authorities to manage their administrative areas. Efforts to improve property tax administration should be given priorities and one way to increase the administrative capacity of the organisation is through the application of the CAMA system. This paper evaluates the application of the CAMA system in assessing property tax in Malaysian local authorities. A survey on 49 local authorities was carried out to assess the administrative capacity of local authorities in terms of human and technological resources and knowledge on the CAMA system as well as the benefits they gained from the system. Response from the questionaires indicated that although there are limited capacity, most of the local authorities are willing to adopt the system.

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1. INTRODUCTION

The problems on property taxation particularly in developing countries is an emergent matter that requires attention from the government as well as all parties involved in the property tax imposition. Rapid population growth and increasing urbanization have triggered increase in demand for real property. These developments are ultimately translated to the responsibility of local authorities in providing facilities for the public. Therefore, local government need to search for sufficient resources to provide these facilities. Basically local government income comes from taxes, fees and fines. Property taxes are the largest fund and the backbone of municipal finance which is used to provide amenities and services. Generally the purpose of property tax is to create funds for local authorities to provide basic facilities and good infrastructure such as provision of street lighting and signage, maintenance and cleaning of roads, drains and drainage; to provide and maintain parks and public recreation areas and other facilities to the community to support public health (Pawi *et al.,* 2011).

In Malaysia, the assessment rates are charged according to the provision of Local Government Act 1976. This provision empowers the local authority to collect assessment rates according to the area of jurisdiction. The property tax is based on market value or the annual value of a property in the Local Authority area (Almy, 2001). Thus determining the value of property is an important task since it forms the basis of imposing tax. Many of the appraisals in Malaysia are using the conventional system to evaluate property tax where the valuation or revaluation of the properties are done manually. This manual approach is one of the main reason for the delay in the process of determining value. Currently, only few local authorities in Malaysia adopts the mass appraisal technique. Mass appraisal may be defined as a systematic appraisal of large group of properties as of a given date using standardized procedures (Kauko and d'Amato, 2008). This has long been widely used in many Europe and American countries. Mass appraisal is an assessment method that is based on integration of modern statistics, mathematical techniques and many other technological systems (Zhang and Chen, 2009).

In order to handle valuation of large number of properties, the assessors must use the correct procedures which are adapted for mass appraisal. Mass appraisal can be used with computer or without computer but through computer, mass appraisal process become more efficient and more widespread (Zhang and Chen, 2009). Therefore Computer

Assisted Mass Appraisal(CAMA) system has been introduced to reduce labour cost and time. CAMA system carries out mass calculation in a stipulated time with high degree of accuracy. The advantages of CAMA system are on the objectivity; well documented; provision for regular or annual revaluations; and improvement in fairness, equity and economies of scale outcome (McCluskey and Anand, 1999). CAMA appeared in the market place several years ago, and since then a number of CAMA software has increased rapidly everywhere around the world. Now in United Kingdom, North American, Australia and some transitional countries such as Slovenia, Lithuania, and Tanzania, CAMA are being used in the mass appraisal of property tax system (Zhang and Chen, 2009).

The aim of this paper is to assess the application of CAMA for property tax administration in Malaysia. In achieving this objective, assessment is made on evaluating the benefits of the CAMA system. Some criteria that were used was on the capacity of the local authorities to value all properties, the financial capacity and perceived the benefits of the CAMA system in their tax assessment. This is organised in the following structure. The next section examines the literature on the CAMA application for property tax purposes. Section three identifies the methods of achievng the objectives of the paper. Section four analyses the perceptions of the local authorites in terms of how the CAMA system could resolve the problems of valuation exercise faced by Local Authorities. The final section concludes on the findings and recommend some solutions to the tax administrative problems.

2. Literature review

2.1 CAMA System

CAMA is a generic term which refers to any soft-wares application used by government agencies to assist in property valuation (McCluskey et al, 1997). Mass appraisal requires the development of a valuation model for the whole area and not just limited to a particular area incorporating micro economic theory that are relevant(Deddis,2002). The objective of building the valuation model is to be able to analyse and value a number of properties efficiently taking into consideration of demand and supply a market factors. Some of its functions are for valuing property, maintaining property data, ensuring tax equity through uniform tax base valuations and many more. Mass appraisal involves a valuation method to a large group of properties systematically using standard procedures and tested statistically(Eckert et al, 1990). This system use recent property transactions which are assumed to be the best indicators to estimates market value for all properties (Meelun *et al*., 2010).

Administration of property taxes requires management and data handling of large property data such as tax payers list, property valuation, taxable rates for different areas as well as

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hearing objections from the people and this requires an efficient system. There are various issues that were raised in designing the system. Some of the issues that surround the development of the system are on the methodology of building the system which ranges from the traditional or orthodox regression method, the heresy or mixed method, the methods in between heresy and the orthodox to the survey and qualitative methods (Kauko and D' Amato,2010; McCluskey et al, 2013). Some arguments put forward to support the application of the approaches are based on accurateness and suitability according to the surroundings(McClusket et al, 1997; 2013) while(Kauko and D' Ammto, 2008) suggest that it may be partly methodological and institutional. What is more important is that the system developed is acceptable by operators and is able to address all problems related to administration of property tax.

2.2   The need of CAMA System in property tax administration

CAMA system is developed mainly to help the local government administrators and assessors to administer the property taxation efficiently and carry out the process of valuation or revaluation exercise systematically. It has been proved that CAMA system needs less time to carry out valuation exercise and it is user friendly(Daud and Kamarudin,2010). It is able to perform complex calculation which is easily undertaken by computer compared to traditional system. The quantity of manpower can be reduced and property information can be easily collected through the use of CAMA system.

  The core area for developing the CAMA system is to create an efficient and equitable way to administer property taxes. This is can be done to ensure that the CAMA system can produce accurate (Deddis,2002; McCluskey et al,1997) and consistent(Eckert et al, 1990) valuation. Equity in valuation refers to the distribution of fair taxes between tax payers (McCluskey et al, 2002) and this is determined by the correct method of valuing properties(Kelly, 1995; Kelly, 2003; Franzsen et al, 2002). The adoption of the CAMA system offer many advantages as compared to the manual system and below are some of the important benefits of having the CAMA system in property tax administration:

i)   Low Administrative Cost and speedy valuation in the long run

        The cost of CAMA system is initially higher than the traditional approach but, once the system is fully in operation the cost of future valuation work can be reduced significantly. This is more cost effective in the long term since all data are already in the system(Tretton, 2007). The computerised valuation system can handle large number of valuation in a very much shorter time.

ii)   Accuracy and Consistency

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The use of CAMA system is more likely to achieve consistency which is one of the main problem with single valuation. This system provides annual revisions accurately with less cost. The resource of a CAMA model provides the means to this end (Tretton, 2007). The use of CAMA system reduce the substantial reliance on valuation appraisal's judgment and experience that might leads to systematic valuation errors. The application of CAMA system produce a consistent result valuation for tax payers equity.

iii)   Less Manpower and Time Consumption

Mass Appraisal offers substantial benefits towards increasing the technical capabilities and efficiency of the appraisals' office. By using CAMA system when assessing a large number of properties, it will reduced the total number of professional appraisals that needed to cover that area and hence reduce the cost such as transportation and other operating expenses.

iv)   Large Data Handling (Good Database System)

One of the main advantages of CAMA system is on the ability to store large data in the taxation database system (Donnelly, 1989). According to Mcluskey & Anand (1999), there is a unique situation where hundred and thousand of property information and transactions in a database can be handled for mass appraisal. This demonstrates that CAMA system can handle these situations efficiently.

v)   Improvement in equity and Fairness

Consistency and accurate valuation as described above will lead to a more equitable and efficient tax system. The ability to handle large number of comparables data manage to generate *'equity'* and *'fair market value'* principles(Donnelly, 1989). Mass appraisal utilized a large number of properties as comparable data and used it to produce an outcome that would reflect the overall market.

3.0   Property Tax System in Malaysia

Property tax in Malaysia is imposed on all properties located within a local authority's administrative areas. These tax are to finance the management of the public services and amenities to the residents to the local residents. These rights are documented under the Local Government Act 1976 (Act 171). According to the review on the local government system in Malaysia(Phang,1989; Hussain,1991) the Local Government are the third and lowest level after the Federal and the State Government. The role of the central government is to provide the structure for tax to be imposed as provided under the 171 Act. The central government deals with macro matters on local property taxation while the state and the local government implements the procedures of tax implementation. Hence all local authorities in

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Malaysia have the same procedures of imposing local property tax. The role of the state government in property tax assessment is to give approval to each local authority on the rights to impose tax and revision to the amount taxable to each property owners.

The basis of taxation are based on property values and hence the major task of the local government is to administer these taxes and undertake valuation exercises in order to determine the amount and rate of tax to be charged. As regards to the tax imposition procedures, the Act provides a section called 'the rating and valuation section which is covered under Part XV of the Act. The law provides the power for local authorities to prepare a valuation list and further update the list every five years. Hence this section is regarded as one of the most important section as it generates revenue to the local government.

The process of tax imposition on all properties requires all local authorities to prepare a valuation list of all properties located within the area. This task is tremendous and many local authorities are facing difficulties in completing it. Hence the list in most local authorities are based on old assessment which gives difficulties to impose fair and equitable tax. There are a number problems that are associated with low performance due to the low collection rate and high tax arrears causing high deficit in spending(Pawi et al,2012), and poor tax management system (Pawi et al,2011). These situations has further caused the community to question on the role of the local authorities on the services that they should delivered to the local community. There is actually a gap between the supply of service delivery and the communities expectation(Phang, 2008). The problem of raising tax and service delivery has forced local authorities to be innovative in terms of providing services and raising revenue to meet to financial needs of managing the area under their administration. One such move was the suggestion of star rating on the services provided(Pawi et al, 2012). In meeting the challenges of increasing revenue there is indeed a need to reform to way in which property tax are imposed by modernising in the way property valuation list is being prepared and the adoption of CAMA seems to be what is needed.

3.1 Developing the CAMA system in Malaysia

The development of the Malaysian CAMA system is built using the Orthodox Multiple Regression Methodology. Although the methodology suffers from a number of criticism, the simple approach and are able to serve its purpose for property tax assessment and administration. The development of the CAMA system in Malaysia are designed to meet the following needs of managing data, analysing data, property valuation system and administration. These systems relate to each other in creating an efficient sytem for property tax. Other aspects that are considered in designing the system are on:

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Economies of scale for developing the system

CAMA system are created to facilitate property tax administration. Hence it must be cost effective. Cost effective means that the use of the system may save the local authorities in any valuation exercises in the long run. Considering that benefits outweigh the cost involved it may be of affordable to most local authorities except to very small local authorities with properties less than 5000 units.

3.2 Assessment of the impact of CAMA system on property tax assessment

The development CAMA system is considered new in Malaysia since many local authorities are relying on the traditional methods of imposing property taxes which has many disadvantages. The development of CAMA in some local authorities has shown success in providing an easier way to handle large property data, with appropriate methods for mass appraisal in property taxation. In some local authorities, the CAMA is integrated with GIS and this is implemented at Segamat in the State of Johor, Maran and Kuantan in the State of Pahang. This system has proven to have potential to be beneficial to the local governments in since the costs of revaluation did not exceed the normal cost if it is conducted manually(Daud et.al 2008; Daud and Kamarudin, 2010).

In assessing the potential improvement of the CAMA system, a survey was done to some local authorities. The data is based on the response from various local authorities on procedure for rating valuation process and the application of CAMA as well as the benefits attained. Questionnaires regarding the application of CAMA was sent to almost all of the 149 local authorities in Malaysia. However, only 49 local authorities responded with a fair distribution of the three categories of the local authorities. Table 3.1 shows the distribution of respondents in the survey.

Table 3.1: Respondents profile of the local authorities

No.	LA Status	Total Number of Respondents	Actual LA population	% of Respondent from Categorical Population	% of Respondent from Actual LA Population
1	City Council	5 (10.2%)	11 (7.5%)	45.4%	3.4%
2	District Council	26 (53.1%)	105 (71.4%)	24.8%	17.7%
3	Municipal Council	18 (36.7%)	31 (21.1%)	58.1%	12.2%
	Total	49 (100%)	147 (100%)	-	33.3%

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The respondents' profile showed that there is a balance between all the three categories of the local authorities in Malaysia thus suggesting that the sample represent the total population. The questionnaires are directed to the head of the valuation departments of each local authority. The contents of the questionnaires are on the issues of rating valuation, CAMA applications and the benefits out of the use of CAMA.

4.0   CAMA applications and tax administrative improvement

The capacity of local authorities to value properties are assessed in terms of their man power, technology, expertise and the financial capability to value properties for taxation purposes. The following outcomes were attained from the analysis.

4.1   Improvement in terms of organisation capacity

The man power capacity of the local authority is measured by the number of staff of the organisation against the scale of valuation work that need to be completed. In the case of assessing the capacity of the local authority, the focus is on the ability of the valuers to handle all the valuation task. There are two main task that is the normal valuation for changes in the properties and the revaluation exercise that need to be completed every five years. Table 4.1 illustrates the workload and the capacity of various local authority to handle all the valuation work. As observed from the table most of the local authorities are incapable of handling all the valuation cases and consequently many of the valuation list is not updated where many of the properties are not valued or the old list applies. Studies have shown that the valuation officer can value at the most 200 two hundred cases monthly on average. This is considering the process of data searching and analysis which would take up a lot of time in the valuation process(Fatin Izzati Syazwani, 2012). As manual valuation takes time, local authorities need to resort to other assistance in order to complete their valuation on time for new tax to be imposed. Thus with such capacity it clearly shows that local authorities need to build up their capacity in to meet the valuation datelines. This is one of the main reason why the valuation list of many of the local authorities in Malaysia is backdated for as long as 10 to 15 years.

4.2   Capacity in terms of technology and expertise
The CAMA application to facilitate property tax administration relies on the familiarisation and the ability of the use of computers in local authority. Thus the adoption to computers in daily work is one factor that can determine the success of the CAMA application. Table 4.1 suggest that computer applications in the daily work of the valuation department is common to all local authority at least in the form of data storage to expedite information searching. However on the technical aspect of the property tax administration shows that usage of computers is still low where many of the local authorities draw their site and buildings plan manually. Since the main parts of the valuation exercise are done manually, it would affect

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the speed of valuation work directly. Hence computer applications to many of the valuation process can be done much faster with the right computer application

4.3　　　　Financial capacity of local authorities

The analysis on the financial capacity of the local authorities in preparing a valuation list is by examining the income and expenditure of the local authorities. The main source of income of most local authority is through property tax although some other revenues are attributed to licensing, fines and rental of local authorities properties. In many cases, local authorities' financial situation are rather weak. The larger local appears to have some balance to be spent for improvement in the property tax system although the cost of administration may be much larger. As for small local authorities, they are mostly at a deficit and thus relying on state or federal support and causing many of their services deteriorating.

An important cause for the weak financial standing of the local authorities is attributed by the low rate of tax collection. Table 4.2 shows the rate collection capacity of the local authorities surveyed. Majority (67.6%) of local authorities collected more than 80% of property tax per year, while five local authorities (14.7%) managed to collect between 60 to 80 percent. The rate of collection for district council was poor where a local council manage to collected less than 20% and three (3)local authorities collected between 21% to 40% of potential property tax. This also means that 32.4% of local authorities were only able to collect property taxes of less than 80% from the actual potential of the property tax collection. The loss of revenue are mainly caused by the arrears in tax collection. The survey carried out shows that all local authorities suffers from tax arrears. (31.3%) Fourteen (14)local authorities (43.8%) had tax arrears from 11% l 20% per annum. There are also two local authorities that bear property tax arrears of between 41% to 50% annually and two others bear more than 60% of property tax arrears. This weakness or failure of local authorities to collect more than 80% of property taxes and having to bear high arrears indicates that local authorities are facing problems in property tax administration, which need to be addressed immediately.

4.3.1　　　　Potential revenue from new development

There are a number of new development that takes place from the last revaluation exercise causing a number to be left out from the valuations list. These properties are potential revenue for many local authorities and thus efforts to add these into the current valuation list is a priority. Table 4.2 shows the percentage increase in total holdings after the last revaluation exercise. Increases in total holdings for most of the local authorities were between 0% to 20%. But there were also two District Councils and two Municipal Councils which had increases of more than 100 percent. This was likely because of a revaluation period performed for more than 15 or 20 years, during which there were many real estate development that occurred within that time.

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It appears that many local authorities are either not concern with the increase in properties in their administrative area or they are not capable to update their list. Thus increasing the capacity of their tax imposition structure will enable local authorities to generate the potential income. Another aspect that have a bearing on the local authorities' financial standing is the success of the revaluation exercise.

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