

## THE USES OF COMPUTERS IN PROPERTY MANAGEMENT & VALUATION

R.W. COUCHMAN

Fakulti Ukur  
Universiti Teknologi Malaysia

### RINGKASAN

*Perkembangan penggunaan komputer di dalam bidang Pengurusan Hartabenda dan Penilaian adalah tidak begitu menggalakkan.*

*Kertas ini membincangkan sebab mengapa kemajuannya terhad dan bagaimana pergolakan terbaru di dalam teknologi komputer telah akhirnya dapat membawakan kebaikan penggunaan komputer kepada firma-firma yang bersangkutan dengan pengurusan, pembangunan dan penilaian hartanah.*

*Bahagian kedua kertas ini membincangkan tugas-tugas yang boleh dilaksanakan dengan cukup memuaskan oleh sesebuah komputer;*

1. Menyimpan dan mendapat balik data
2. Memilih, mengguna dan menganalisa data
3. Mengerjakan pengiraan yang rumit dan/ atau yang berulang
4. Memproses perkataan.

*Setiap tugas-tugas ini adalah bersangkutan dengan bidang amalan ikhtisas yang mana akan mendapat menafaat dengan penggunaan komputer.*

*Akhirnya, kertas ini membincangkan faedah-faedah yang boleh dinikmati oleh bidang ikhtisas ini sekiranya teknik-teknik komputer digabungkan di dalam amalan praktik.*

### ABSTRACT

*The development of computer application in the areas of Property Management and Valuation has been relatively slow.*

*This paper discusses the reasons why progress has been limited and how the recent revolution in computer technology has finally brought the many advantages of computerisation into the reach of most firms dealing with the management, development and valuation of landed property.*



*The second half of the paper considers the tasks which the computer is able to perform exceptionally well,*

1. storage and retrieval of data
2. sorting, manipulating and analysis of data
3. performing complex and/or repetitive calculations
4. word processing

*Each of these tasks is related to areas of professional practice which could benefit from computer application.*

*Finally, the paper discusses the benefit which may be enjoyed by the profession if computer techniques are incorporated into practice.*

## 1. Introduction:

"A computer" is defined in Websters International Dictionary as "as electronic machine which by means of stored instructions and informations performs rapid, often complex calculations or compiles, correlates and selects (or manipulates) data".

It is unfortunate for property managers and valuers that the popular understanding of computers has concentrated on the "Calculating" or "mathematical" aspect of the computer and rather ignored the very useful application of data manipulation.

Most of the mathematical involvement of the property manager or valuer is very easily serviced by the simplest of pocket calculators, the "general practice surveyor" therefore has been slow to appreciate the enormous potential of using computers to assist in his "everyday" working requirements which so heavily relies on the collection, storage and analysis of data.

Over the past ten years there has been a growing awareness, especially in the United States and the United Kingdom, that the computer has a great deal to offer to the world of estate management and many of the tasks of the "professional property person" are ideally suited to computer application.

It is interesting to reflect why, considering the rapid advances made by the computer in many sectors of science & business, the acceptance of the computer has been so slow in the world of real estate.

- a) Computer manufacturing and distributing firms tried to service the biggest and most profitable markets first i.e. Government, Science, Finance, Manufacturing.
- b) Firms involved with landed property tend to be relatively small and extremely diverse in character and therefore it was difficult for computer programmers to develop homogenous programmes that would justify the high initial capital cost.

- c) Valuation, investment appraisal and market analysis has not been approached in a very systematic or thorough way in the past.

Perhaps the most important reason for the lack of computer activity in the area of real estate was the high capital cost involved. However, the revolution in technology which has produced the "micro-chip" and the development of micro and mini computers has brought the services of a computer within the financial reach of an expanding number of "real estate" firms.

An illustration of the rapid advances in technology is the existence of "desk-top" computers which have the same capacity of storage and manipulation of data as a transistorized computer which would take up a moderate sized room. It also has a far greater capacity than the first generation vacuum tube computer developed initially by Howard Aikes of Harvard University between 1937-1944 which required to be housed in a large building.

The gains in speed and storage capacity over the last 4 decades therefore have been colossal and massive competition of computer development to capture the ever growing market for computer use has led to the constant reduction in cost and complications of setting up a personalized computer system.

The inclusion of computers into smaller and smaller business concerns has encouraged a rapid growth in "soft-ware" packages i.e. ready made programmes designed to carry out specific functions once fed into a firm's computer system.

These "packages" have made it possible for firms to take advantage of computer assistance with only the minimum knowledge of computer technology. The computer operator simply engages in a written dialogue with the system with the aid of a type-writer and a television screen (or printer).

After considerable delay, various computer "packages" are now being prepared to assist the property manager or valuer. Some of these programmes would be very relevant and extremely useful to professional practice in Malaysia today, both in the public and the private sector.

The remainder of this paper gives a summary of the main areas which could benefit from computer assistance.

## 2. Computer Application

The computer performs the following tasks exceptionally well:—

- (1) Storage and retrieval of data;
- (2) Sorting, manipulating and analysis of data;
- (3) Performing complex and/or repetitive calculations;
- (4) Word-processing.

Each of the above tasks may be ideally related to the context of Property Management and Valuation.



## 2.1 Storage And Retrieval of Data

The property manager and valuer needs to gather an enormous amount of constantly changing data on which to base management decisions and justify opinions of value. Only in this way is it possible to ensure that each problem is tackled in an objective rather than subjective manner.

The basic computerised storage and retrieval system is a straight forward replacement of the traditional filing cabinet and filing clerk.

With the traditional manual system there is always the problem of information loss and the growing difficulty of comprehensive information recall. In certain instances, if a quantity of interrelated information needs to be recalled, the process might require the checking of each individual file.

An example would be the creation and operation of a property register:—

A firm dealing in the sale and letting of landed property must keep detailed records of each property and distribute information to subsequent applicants looking for suitable property.

A manual system would require the checking of each property file in an attempt to match the property particulars with the applicant's requirements. The process can be extremely time consuming and inaccurate.

A computerised system means that each property may be listed in accordance with various feature i.e. location, accommodation, age, condition, value, etc. When an applicant requests a particular type of property, a simple operation sets the computer to search through each entry within the system and print out the relevant properties. The process is practically instantaneous. The computer may also be programmed to take a note of the applicants name and address, type an envelope if details are to be sent through the post and ensure that the applicant has not received similar information beforehand.

A further application of the straightforward data storage and retrieval system is the selection of suitable property transactions to form relevant comparables for valuation purposes:—

The most widely used method of valuation in practice is the Direct Comparison method. This method bases an opinion of open market value on the value obtained for property similar in use, age, condition and location which has been recently sold or let in an open transaction.

All known transactions may be fed into the computer. The valuer may then recall selected information in various groups:

- i.e. Office premises in Jalan Ampang;
- Linkhouses in Taman Cheras.

The computer will then print out a fully comprehensive list or relevant data.

The databank can be easily updated by employing a simple edit programme.

It should be noted here that the computer does *not* formulate an opinion of value itself but presents relevant information clearly so that the valuer may apply his technical skills and experience to make his decision on a sound basis.

A third use within this category relates to the efficient storage of property management records. The computer is ideally suited to keeping Estate Terriers which include all relevant management information on individual properties.

The property manager may get instant "feed-back" on tenants in arrears of rent, outgoings spent on property, maintenance and service data, rent-review dates etc. Such information would be an invaluable aid to his decision making and ensure that important "dead-lines" are not overlooked.

The use of computers in this category, therefore, allows a considerably faster and more efficient use of gathered information.

## 2.2 A Further Progression In Computer Capability Is The Manipulation Of Input Data.

i.e. the operator is not simply requesting a listing of input but requesting that the input be manipulated or analysed in some way before the output is listed.

For example, a Rating Authority would find it most useful to keep records of properties in a data bank so that comparables were easily available to assist in future assessments. However, having computerised all the information about each property it would be a waste of computer capacity not to analyse the information in some way so as to present statistics which might be useful in making policy decisions relating to land administration and land use planning:—

- i.e. total housing stock;
- age of existing housing stock;
- total number of unoccupied buildings;
- total floor space for commercial, retail, industrial use.
- etc.

A computer programme to allow manipulation of input rather than a simple retrieval system becomes more complicated and requires a greater computer capacity — However, to compile statistics of this nature on a manual basis from rating returns is a formidable task.

A more advanced form of input manipulation and computer technique could create land value contour maps and land use maps which are very useful in the area of land use planning and development.



## 2.3 The Third Group of Programmes Makes Use of The Computers Calculating Ability.

### 2.3.1 Multiple Valuations

One of the tasks of a property manager with a large property portfolio is to assess the current capital value of the property assets. For commercial valuations, this form of revaluation is both repetitive and time consuming. This process is ideally suited for the computer.

The property data should already be stored in the computer as a management file. The operator needs to input a suitable percentage increase in rental values and a suitable rate of return for each property. The computer is then able to calculate the Capital Value of each property using an Investment Method of Valuation.

### 2.3.2. Development Valuations

The value of property with development potential is directly related to the subsequent use of the proposed development. The traditional method of valuing properties with development potential is known as the "Residual" method. The capital value of the proposed completed development is calculated (Gross Development Value). From this value, the total cost of development is deducted including an element for developers profit. The "Residual" amount is the maximum that could be bid to acquire the land for the particular development (having discounted the land value by the time taken to complete the development).

This type of valuation has several disadvantages e.g. The valuation is based on several assumption of future values and costs. Different schemes may result in different land values.

Changes in the market structure and the availability and cost of finance may have drastic effects on the final valuation.

The computer can play a very important role in overcoming the problems of development valuation.

Firstly, if data on costs and values are fed into the computer, the operator can rapidly see the effect on land value assuming changes in the projected development scheme. i.e. increase or decrease in accommodation provided, increase in construction costs or cost of finance, delay in completion of project.

A series of valuations may therefore be considered which by traditional methods would be too time-consuming to calculate. The result would be a more comprehensive and accurate consideration of values of landed property with development potential.

### 2.3.3 Discounted Cash Flow Techniques

The second advantage of computerisation within the subject

area of development is that it encourages the increasing use of more sophisticated forms of development valuations i.e. Discounted Cash Flow Techniques.

This technique requires a much more detailed analysis of all development costs and revenues, including a more accurate assessment of the time factor of each payment or receipt. The resulting cash flow is then discounted at a suitable rate of return and the discounted costs are deducted from the discounted receipts (Net Present Value).

The positive net present value is the maximum that could be paid for the land with development potential.

Without computer assistance, the above technique involves such a multitude of calculations that most practitioners would tend to revert to the more traditional techniques. However, the computer reduces the task to very manageable proportions and the main requirement becomes the production of a projected cash flow.

The computer will then calculate the Net Present Value. The operator may easily change the cash flow to test the result of an alternative scheme with a different cash flow.

### 2.3.4 Investment Appraisal

The Discounted Cash Flow programme may be easily extended to allow the property manager to carry out a *full investment appraisal* service. The difference here being that the property manager/valuer advises the potential purchaser of the likely return he will make on an investment in development land assuming he purchases the land for a given sum.

The programme will calculate the Internal Rate of Return (The overall return on capital expended) of the Project which will form a firm foundation as to whether the development should proceed or not. With greater sophistication, the programme may include both sensitivity and probability analysis i.e. forecasting possible events which may affect the projected return on the investment.

### 2.3.5. Redemption Yields and Equated Yields

Investment in landed property results in a combination of returns i.e. an annual return in the form of rental income and, usually, a capital gain on the eventual sale of the investment.

If an investor wishes to know the overall return he is enjoying on his investment it involves a complicated series of calculations to combine the two elements of income and capital growth. The computer can be programmed to calculate both Redemption and Equated yield simply by inputting information of current rent, full market rent, provision of rent reviews, expected rental growth. This type of analysis is helpful when comparing the returns on in-



vesting in landed property with other forms of investment.

### 3.3.6 Linear and Multiple Regression To Predict Market Values

This form of analysis has proven to be a useful method of valuation in the United States for certain types of property which are similar in nature i.e. mainly residential property.

The system works by statistically analysing a series of comparable sales transactions to show how value is affected by differences in such features as:-

- a) square foot floor area;
- b) age of structure;
- c) accomodation characteristics and services;
- d) location.

A valuation formula is then derived on the basis of the analysis which reflects how market value is affected by certain features of each property. It may also be a useful guide to forecasting market trends.

This system is often criticised that it ignores the very important factor of individual satisfaction where house buying is concerned. However the system is claimed to be useful for 80% of properties in various studies carried out in the United States.

### 2.4. The fourth area of computer application which is being rapidly introduced into all forms of administration is the technique of word processing.

The property manager/valuer has a constant requirement to prepare high quality reports. The technique of word processing has many advantages. Firstly it allows a simple editing technique for content and presentation. Secondly it allows the retention of constant material for future print-out. Thirdly it allows a high quality, high speed print-out for multiple copies.

Word processing therefore reduces waste of time and materials and ensures a superior quality of presentation.

### 3. Conclusion

From the above discussion, it can be seen that the computer may perform many functions relevant to the role of the property manager/valuer.

It is important to educate the professionals in both public and private practice concerning the wide capabilities of computer application.

These techniques, however, will only be introduced into practice if suitable programmes are developed which can be understood by individuals without a detailed knowledge of computers. The product of the programmes must be suitably impressive to attract prac-

tioners away from their traditional methods and employ the more comprehensive approaches available with computer assistance.

The end result should be more responsible decision making. Without removing the artistic element of professional instinct resulting from practical experience, the modern approach adds a scientific dimension which must be of great assistance to the problem solving function.

The profession of Property Management/Valuation has the means therefore of using modern technology to perform more efficiently and accurately thus giving a better service to the client in particular and society in general.

\* The Department of Property Management/Valuation is at present engaged in the development of a number of programmes mentioned in this paper. These programmes are initially for teaching purpose but liason will also be sought with professionals in practice, especially in the public sector.