ACCRUED VALUE ASSESSMENT - A DYNAMIC APPROACH FOR INVESTMENT APPRAISAL AND FACILITIES MANAGEMENT

Accrued value assessment

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Abstract

Construction projects typically involve a variety of decision-makers that decide on alternatives that generate capital and on-going costs during a project's life. These capital costs generate value for different stakeholders and potential for returns to the project owner, which are durable and vary over the life cycle of the completed project. Conventional investment appraisal techniques, which focus on cash flows represented by the costs and expected returns of a project discounted to a common base period, do not reflect the total value of capital expenditure choices which include intangible and non-monetary benefits as well as reduction of future costs and financial returns. This paper discusses an approach in which project decision-makers evaluate and allocate identifiable value from capital and continuing costs to relevant stakeholders and periods in the life cycle of the project. The objectives of different stakeholders for the project can be taken into account in the assessment of project expenditure value. The ability of a project owner to recover a premium for identified accrued value will provide incentives for up-front spending where the potential for improving overall project performance is greatest. Discounting procedures will allow the value of the project to be appraised at any stage of the project's life cycle. This approach leads to a technique, which is more refined than conventional appraisal of earning potential with the ability of a project owner to recover a premium for identified accrued value. The accrued value assessment also provides a useful tool for facilities management and design decision evaluation. The approach builds on and is embodied in a larger framework for project decision support, which aims to improve overall project performance.

Keywords: Accrued Value Assessment, Facilities Management, Decision Support.

1 Introduction

It is not desirable in terms of a life cycle perspective for initial and continuing capital costs to be minimised, if the future financial performance of the project is disproportionately penalised. However, as different stakeholders come into play over the project life cycle, there is a natural propensity for developers to trade off their initial capital costs against costs that might be incurred by future stakeholders.

Hence rational capital cost decisions cannot be decided unless the value of these up-front costs can be identified and factored into the investment appraisal of the project at any period in its life cycle. These costs would be recovered from other stakeholders who would benefit from the enhanced financial performance of the project. This would provide the incentive for the developer to invest additional value up-front and improve the life cycle costs associated with the project for subsequent stakeholders.

It is also desirable for the developer and subsequent stakeholders to monitor the continuously changing status of an investment and use the data to assist decision making in subsequent projects or benchmark between alternative projects. One method of accomplishing this is to take into account the accrued (time dependent) value of capital decisions and allowing this to be factored into the investment decision.

This paper proposes the use of an integrated decision approach that identifies values up-front, together with continuing capital costs and accrues these to the appropriate period in the project life cycle.

The concept has merit for a number of stakeholders in the project life cycle. In addition to the incentive offered by the ability of a project owner to recover a premium for identified accrued value, subsequent purchasers (investors) are given an accurate 'real value' assessment of a project at any stage in the project life cycle. Current methods of investment appraisal fail to identify the 'real' initial value injected into the project and do not discriminate with respect to future capital costs to be incurred once alternative stakeholders are introduced.

This paper will provide an overview of current investment appraisal techniques and investigates the relative merits of each tool. The accrued value assessment concept is introduced and a review of the advantages it offers is undertaken. Finally the paper outlines an implementation strategy that maps the concept through the design production, construction and facilities management stages of the project life cycle.

2 Current methods of investment appraisal

The conventional investment appraisal and facilities management techniques currently available are briefly outlined below. Two distinct types of methods currently exist. The first type does no take into account the timing of cash flow. The general approach adopted by these various methods centres on cash flows represented by the costs and expected returns of a project. These methods include: accounting rate of return, investment yield and pay back period. The second type however does

take into account the timing of the cash flow discounted to a common base period. The methods that fall into the second include:

Net present value (NPV) - return on investment

Net present value is the simplest and most commonly used discounted cash flow method for capital investment appraisal consists of calculating the value in the present year of all the cash flows associated with the project, and then adding these values together. This results in the total being known as the net present value (NPV) of a project (Dixon, 1994).

Internal rate of return (IRR)

The IRR represents the rate of return on capital expended that the owner would obtain for the initial investment in the project (Ferry & Brandon, 1991). The IRR is the interest rate, which results in the capital outlay being paid off by the incoming cash flows at the end of the life cycle of the project, after deduction of 'interest payments' for capital outstanding.

Life cycle costing of individual building elements

Life cycle costing is a method of evaluating all of the relevant costs associated with a project throughout its life. In a construction project the analysis is usually performed with respect to construction, maintenance, running and demolition costs. However life cycle cost analysis can be adversely effected by inflation and the limited nature of a one off life cycle costing analysis tends to limit the reliability of an extensive study into the main building cost items (Sierra, 1999).

3 Advantages and disadvantages of current techniques

The alternative investment appraisal techniques outlined previously provide the basis by which property investors decide to invest, hold or divest of a capital works project. Significant use is made of these techniques at project initiation and throughout the design development and documentation period to firm predictions of project worth.

Figure 1 indicates the stage of the project life cycle in which current approaches to investment appraisal finish, i.e. at design documentation. Each method is completed at this stage with nothing following through to aid in investment decision making during the construction stage or post project completion. This has significant implications for changes in scope during and post completion, which should be factored into the decision to invest. Indeed the ability to update and compare the initial study post project completion is very difficult and sometimes not possible.

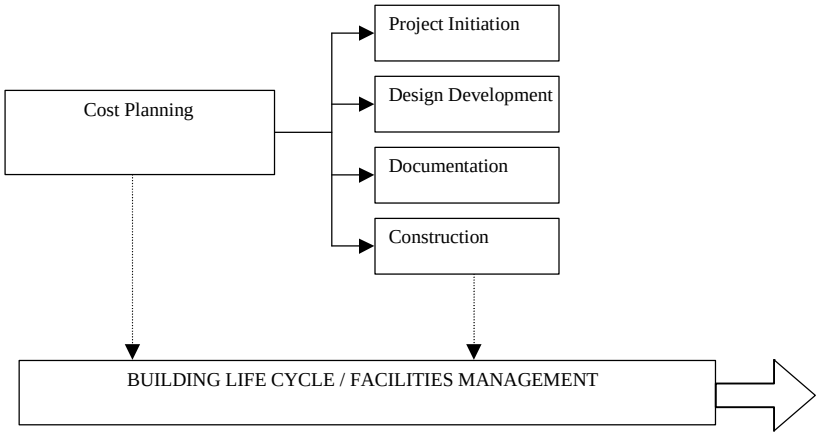

Fig. 1: Investment Appraisal and the project life cycle

As widely applied as the current methods have been they do not reflect the total value of capital expenditure choices, that includes intangible and non-monetary benefits as well as the reduction of future costs and financial returns. In addition all current approaches to investment appraisal fail to consider the evolution of the continuously evolving facilities management concept and the extensive list of the implications this has for property ownership.

The majority of the current techniques were developed prior to the evolution of current facilities management concepts. The changes in the property investment environment, which have included property syndication, the proliferation of property trusts, outsourcing of non core facilities management functions and significant taxation changes (with respect to the Australian context) all require a tool to evaluate individual property returns on an ongoing basis.

Facilities management provides the property owner with an integrated management system focused on the efficient management and control of a property or whole portfolio. The link between property and the core business objectives of an organisation is the key concept within the evolving facilities management discipline.

The evolution and change in facilities management has effectively changed the investment appraisal focus to require emphasis on the continuing value of holding every individual property. This value will change over time as the building ages, taxation benefits are reduced and the cost of maintenance and other recurrent capital expenditure increases. Hence there is the need for a tool that can provide an ongoing decision aid for investment appraisal and facilities management.

4 Accrued value assessment: a dynamic approach to investment appraisal

This paper describes a new approach to track the value of an investment over its entire life cycle. As outlined previously, current methods of investment appraisal focus on project initiation and fail to adequately keep pace with the changing nature of project once completed. This new approach provides different stakeholders in the project life cycle with a tool that can also be used to manage the financial planning,

both capital and recurrent, of the project. Once the initial assessment has been completed the same document will evolve of the life of the project to be used by successive stakeholders who may enter post project completion.

4.1 The Accrued value concept

The accrued value assessment tool can be extended beyond maintenance planning and costing to include other ongoing expenditure that is continually attributable to the life cycle of a completed building. Examples may include, land tax, rates, essential services and condition audits, asset registers, taxation changes and benefits associated with ongoing capital works, leasing fees, insurance's, year 2000 compliance expenses and a host of other items.

The general concept is graphically shown in Figure 2, below. This diagram illustrates the extended scope of the accrued value concept. The line A-A delineates the base for dissecting the accrued value profile of the building three years post completion. Not only are the capital costs expressed in annual terms, but also each asset management cost can be assessed individually to reflect the changing nature of management costs over the entire building life cycle. This aspect will be particularly important for stakeholders who enter post completion and require information in order to manage the facility and anticipated associated costs.

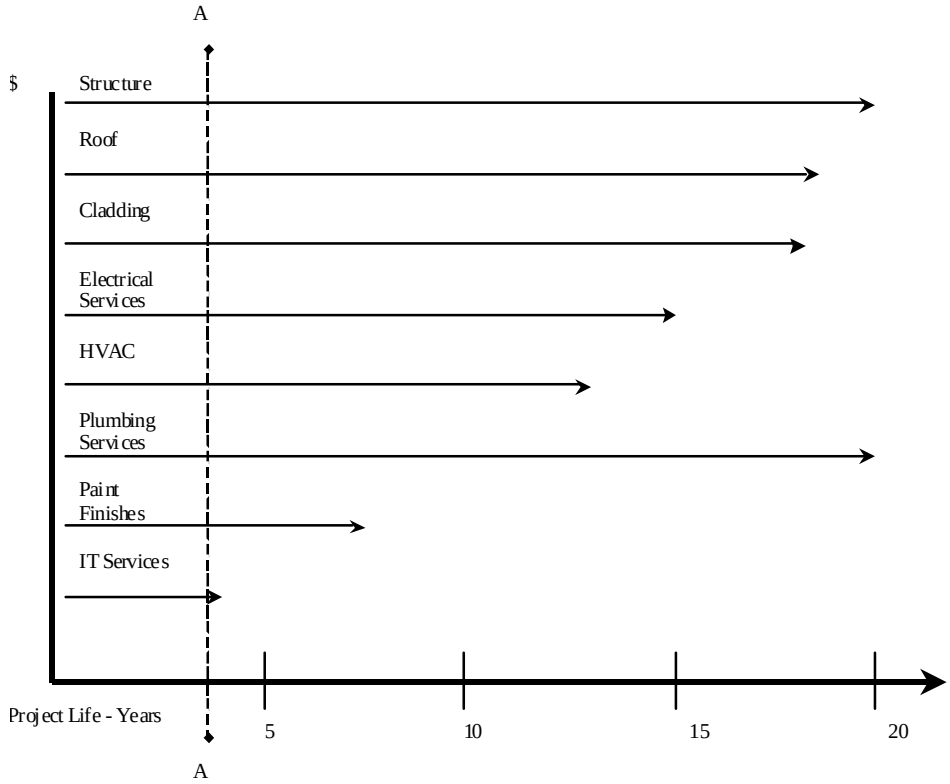

Fig. 2: Accrued value profile of initial construction

Accrued value assessment is intended to provide a whole of life initiative for decision support in all stages of the project life cycle. The technique offers the ability to evaluate 'dead' and 'live' items of a building and the ability to track their condition over the period of the buildings life cycle. A unique aspect of the tool is the ability to make an investment decision based on the actual historical evidence that has been accumulated since the building was completed. This data would incorporate the original decisions made on building plant and equipment and the reasons for their selection.

Particular advantages offered through the application of the technique are envisaged to include:

1. A tool to determine where major project costs have been incurred.
2. As a method of determining the value of an individual investment past, present and future.
3. The ability to project and track the future fluctuations in value over an extended period of time. This will enable an investor or purchaser to base decisions on more concrete data and generate significant information from which the value of individual property investments can be benchmarked on a real return basis.
4. Provide the maximum continuous taxation advantages from all items of plant and associated equipment.
5. The ability to forecast major cost items years ahead.
6. The potential to be applied at due diligence stage to benefit both the vendor and the purchaser.
7. Appraise, on a continuous basis, the accrued value of an individual building or a large portfolio.

One of the most significant advantages outlined above is the ability for project decision-makers to evaluate and allocate identifiable value from capital and continuing costs to relevant stakeholders and periods in the life cycle of the project. This provides an objective basis for valuing a property asset for balance sheet purposes.

The tool offers the added benefit of flexibility in data entry so as complex calculations including such aspects as the changes in taxation aspects and emergency equipment replacement can be tracked and their total effect on asset value determined. The ability of a project owner to recover a premium for identified accrued value will provide incentives for up-front spending where the potential for improving overall project performance is greatest.

The accrued value assessment also provides a useful tool for facilities management and design decision evaluation. It offers the facility manager a comprehensive financial package, these can be used to set performance targets and benchmark existing and new projects. Specific problems or issues can be tracked and action taken well ahead of issues arising. The ability of the building to adapt to technology and the changes associated with such can be assessed and costs for essential upgrading,. For example, year 2000 compliance, can be projected.

Design decision support is provided with a financial data collection tool that can track individual buildings and provide evidence for all stakeholders to improve performance.

4.2 Implementation strategy

The ability to implement the concept from project initiation through the design production, construction and facilities management stages of the project life cycle is not only essential in order to maximise the value of the concept as a decision support tool but also crucial.

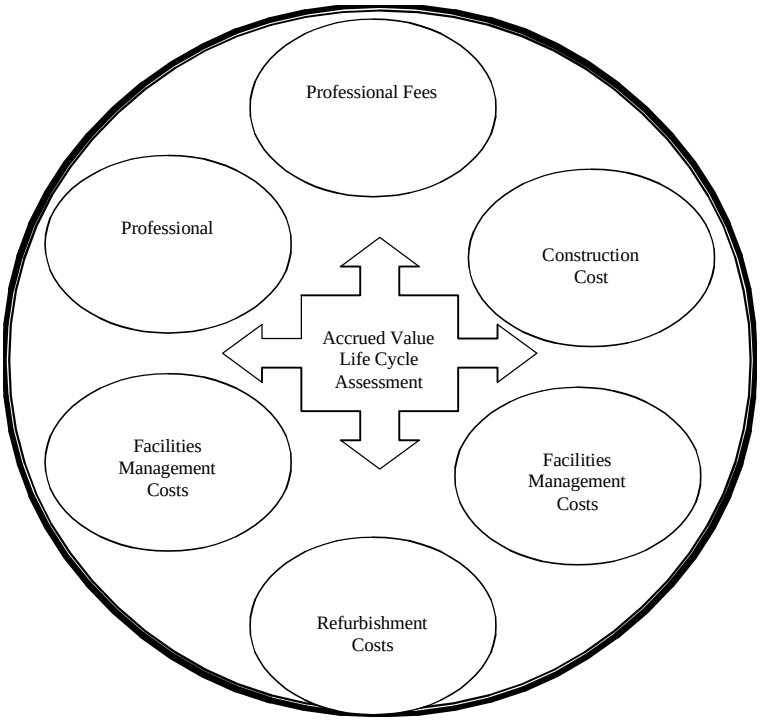

Fig. 3: Scope of data required for implementation

The tool has the potential to pass from one stakeholder to another a fair and true value of major building costs that will aid in the determination of overall project value and return on investment. It is envisaged an implementation strategy would require the building owner to invest significantly more in cost advice and facilities planning at project initiation. From this foundation the ability to control and apply the data to the completed project is at its highest.

5 Conclusion

The assertion that the construction industry lacks any real incentives for up-front spending where the potential for improving overall project performance is greatest has been stated repeatedly. Accrued Value Assessment is intended to provide a whole of life perspective for all stakeholders in order to maximise the investment worth of spending funds in the initial stages prior to construction. The benefits of such can then be realised by subsequent stakeholder reward. If value is made explicit then it is more likely be recovered by appropriate premiums paid when the property is passed from one owner to another.

The consistent practice of Accrued Value Assessment from initial cost planning to on-going facilities management would greatly improve the life cycle management of any physical asset and add to best practice performance principles within the construction industry.

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