Activity Based Funding Of Assets

Henry John Gough MIE Aust. CPeng, MIVMA, MHKIVM
Australasian Value Management, Perth, Western Australia

Abstract: Those who invest in infrastructure and processes are not solely buying assets and resources, more importantly they are buying functional capacity for the provision of services. Yet, the way project costs are traditionally broken down does not readily relate input costs to functional outcomes. So how do project owners know they are getting value for money?

They may seek reassurance by commissioning a value workshop but without knowing the cost of providing for various functions, how can participants hope to demonstrate value or suggest a better value way? Without having a reasonable cost breakdown by function, decisions made at value workshops may be speculative and the results may not support the relevance or worth of value workshops.

Asking a quantity surveyor to break down project costs by function generally gets a cold reception because their tools do not support such a breakdown. Some quantity surveyors, who understand the request, will make an attempt if a function breakdown is supplied to them - so it is possible and the results may provide surprises for some project owners.

The practice of allocating funds for services using an Activity Based Funding (ABF) model is growing, implying that providers must justify the value of their services (i.e. functions) in terms of the funding they receive. Why shouldn't this approach also apply to the funding of resources that accommodate, or otherwise make services possible?

This paper suggests how agencies and funders can better understand the value of their investments in assets and facilities, in terms of the functions they accommodate. Questions to be addressed include: What is an appropriate level at which to develop a function cost breakdown, who should do it and should such a breakdown be undertaken as a matter of course? If so, how could it be achieved without adding unduly to the cost management function?

Key words: Value for money, infrastructure, resources, cost management, cost and worth, functional breakdown, cost of functional outcomes, Activity Based Funding.

INTRODUCTION

A basic principle of value management (VM) is to test the cost and worth of functions; in the case of a physical asset, to test the value of accommodating activities and other functions. However, the way project costs are traditionally broken down does not assist in determining the cost of accommodating functions and offers no help in assessing relative functional values?

At an individual level, when we purchase an asset like a new car, we do not ask a dealer to break the cost of the car down in terms of its (elemental) parts. We look for the relative worth to us of functions like: "Economy", "Performance", "Space", "Image" and "Safety", so that we can determine which model car for us represents best value. We prioritise the functions we desire and pay for the functions we want.

In the provision of services there is a trend towards providing funds to agencies in accordance with functions (or activities) delivered; some government health services in Australia have had a form of Activity Based Funding (ABF)[1] since the early 1990's; Activity Based Costing (ABC)[2] is also being considered in some agencies. As of July 2012, ABF is being adopted for health care funding throughout Australia. Activity Based Funding implies that agencies will be funded in accordance with the activities they can demonstrate they undertake on behalf of governments for community clients.

Why should this principle not also apply to the provision of accommodation that enables activities to be carried out? Should not project owners know the cost of accommodating their key functional requirements in a new facility? If funding is limited, would they not want to know where, or how best, they can spend available funds to give the best value outcome or highest return on investment? After all, is not the cost of accommodating functions part of the cost of providing services?

The answer to these questions is likely to be "Yes", from those who have the responsibility for delivering services and managing the effectiveness of them. However, it is not usual for project professionals to express the cost of a project in terms of services or functions. Cost estimates, for most capital projects, are generally broken down by the quantity surveying (QS) profession in the form of a building elemental cost breakdown. Categories typically include items like "substructure", "frame", "internal walls and partitions" etc.; building work and preliminaries are expressed in similar terms. It is an effective way of costing a project from the building contractor's and contract manager's points of view but it

does not help the project owner determine whether value for money has been achieved in terms of the activities to be accommodated.

To determine where value may be enhanced VM workshop participants need to know what activities and functions are to be accommodated, their relative priorities and the full portion of project costs that can be attributed to them. In the case studies to follow, the entire project cost estimates were successfully broken down across functions identified by workshop participants. For each example significant improvements in value were achieved, in some cases the very course of a project, even if documentation was advanced, was changed in order to achieve a better value outcome. In the discussion to follow, the words "activities", "services" and "functions" can be considered interchangeable.

Background

Professional architects and engineers are more concerned with engineering efficiency or architectural merit than whether the cost of accommodating various activities (functions) represents good value. Those who can make decisions about the value of functions and hence the relative values of accommodating functions, are the project owners and they should do so at the earliest stages of project development.

Assessing the value of accommodated functions is complex since the priority of activities accommodated may differ from the priority of services delivered. For example, an important service function for a museum is "Provide storage" but the function of "Display" will almost certainly have a higher priority; so better value may be achieved if "Storage" is accommodated wholly or partly somewhere else, depending on a whole range of variables that will apply.

The manual and technological tools quantity surveyors (QS) use to build up estimates do not lend themselves to costing a project by functions and their training does not equip them for taking into account the cost of functions. Besides, in general they would not be paid to provide a functional costing so most quantity surveyors will balk at the prospect of having to do it.

From the perspective of a value assurance professional however, first thoughts will be to understand the cost of a project in terms of the functions/services/activities it must accommodate and how these costs can be demonstrated. With no functional cost breakdown readily available, expressing the quantity surveyor's elemental breakdown in terms of activities and functions becomes the responsibility of workshop participants and the facilitator; preferably with QS support.

The cost of valid functions, such as "Provide a sense of place" and "Provide an appropriate image" may be spread across several functional areas. For example, in an office situation, should the provision of closed offices be considered wholly a function of "Security" or is at least part of it related to "Image"? The additional cost of providing closed offices may be split across these functions and others. Similarly, the provision and extent of high quality, high cost finishes may be related to functions such as "Durability" but it could also be part of providing an appropriate "Image". Who should decide which functions these costs should be assigned to and whether these functions have a high priority?

Value management practitioners may be pressured to preserve certain aspects of a project at all costs by some project professionals and/or stakeholders (who may have a special interest); so decisions on functional priority and cost allocations should not be left solely to them. Project owners or funders must take control of commissioning value assurance studies in order to reduce the possibility of self-interested groups or individuals attempting to obscure the costs of accommodating some functions or otherwise promote aspects that may not be in the interest of project objectives.

In my view it is the key stakeholders and funders, with assistance from a value assurance professional, who should decide which of the functions being procured, are most important. However, they are generally not able to allocate costs to functions since they do not have the technical skills. A cost management professional or quantity surveyor needs to be involved in assigning costs to identified functions so that accurate assessments can be made.

What is involved in identifying and costing activities to be accommodated and why is it important? Value assurance professionals will have a range of experiences but personally I have generally found reluctance among professionals and workshop participants to cost projects by function. Where it has been done successfully, the benefits to workshop outcomes and project value are significant. This series of case studies, relating to VM/VE workshops carried out by my company, is intended to shed some light on activity or function costing and the benefits of doing it.

Case Study 1

Early in my VM career I was involved in a development project which was already at an advanced stage of documentation. The project owners wanted assurance they were getting value for money so a VM workshop was commissioned. Participants were asked "why does the project exist"? Being a private project, I was not surprised to hear them respond with, "To make a return on our investment (ROI)". "How will you achieve this I asked? "We are selling apartments" and to attract buyers we are building other facilities and attractions that accommodate entertainment, sporting, retail and other activities.

Six key functional outcomes were listed including the apartments ("Accommodation"). After breaking down the investment (with the help of the QS) across these six functional outcomes, it became clear that disproportionally high costs had been allocated to functions that did not support the key functional objective (to make a profit out of the sale of apartments). The project owner picked up on the anomaly very quickly and prior to the next workshop the investment in apartments was almost doubled, resulting in a more than doubling of the ROI even though input costs had gone up.

This experience highlighted for me the importance of being able to break down a cost estimate by functions. Doing so enables workshop participants to see at a glance what their investment is buying in functional terms and the relative costs of accommodating them. It also demonstrated that knowing the costs of activities accommodated enables the investment to be weighted in favour of the most important outcomes; very important if the total pool of investment funds is limited.

Case Study 2

The project funder requested a VM study to verify that value had been achieved for a new laboratory project where the estimate exceeded the budget allowance. The QS had worked with me several times before so understood why I requested the elemental costs to be expressed in terms of functions. Together we developed a function cost breakdown but in addition to the usual laboratory and administration functions I asked that other

functional requirements be costed including: “Access”, “Sense of place and Image”. There was no suggestion that these functions were any less important to the project than the usual laboratory functions but before the workshop began, a professional contacted me to “Ensure external treatments to the building were not compromised by cost cutting”.

I reassured him my task was not to cut costs but simply to assist decision-making based on a range of information, including the cost of functions being accommodated. Workshop participants, including professionals like him, would have the opportunity to provide input that would assist the project owner to decide whether the costs of accommodating identified functions represented good value.

Prior to the workshop and with help from key stakeholders, a function hierarchy was developed down to the third level (L3). The QS was able to separate out from his elemental cost breakdown the cost of accommodating all identified functions, the total equalling the project estimate at the time. Results summarised up to level two (L2) of the hierarchy, in order of percentage cost, were as shown in the table below:

Functions accommodated	% of Cost Estimate
Prepare and Analyse samples	57
Provide access	13
Provide care (staff and patients)	12.1
Provide sense of place and Image	7.5
Provide administration	5.1
Provide Storage	4
Provide teaching and research	1
Provide disposal	0.3
Total	100

“Manage risk” (including design and construction contingencies) is a function that must be allowed for in all cost estimates but which in general does not need to be accommodated. For this reason, it should be separated out from service functions for the purpose of comparing relative values but it cannot be ignored since for some projects it may determine project viability.

At first glance the magnitudes of costs against the various functions are unremarkable. Just because some items represent a relatively small percentage of cost does not mean they are unimportant or under provided. But having the third level of the function hierarchy at their disposal enabled participants to question specific elements of the function cost breakdown. Some found it strange that the reason for the project’s existence and key functional outcome (“Prepare and Analyse samples”) accounted for just 57% of the estimate. Others questioned relatively high estimates for “Provide Care” and “Provide access”, they were also concerned that “Provide sense of place and Image” accounted for 7.5% of the estimate (the external treatment of the building of concern to the project professional who contacted me was a significant contributor to this).

Function cost information developed at the workshop indicated to participants which areas they should focus on for adding value; their ideas resulted in an approximate 6% cost saving for the project and significant enhancement of key function and service outcomes.

Case Study 3

An example where the risk function was decisive was a new sporting complex planned to be built on a disused waste disposal site. There were minimal direct site acquisition costs so it looked like a very good deal. A VM workshop was held to look for ways of getting a better value outcome for the very costly building works which included grandstands, pitch, change rooms and public facilities.

After breaking down costs in terms of functions (including “Risk”), workshop participants discovered that the cost of providing for “Risk” was an unacceptably large part of the project cost. “Risk” was deemed to include parts of functions such as “Stabilise pitch”, “Stabilise buildings”, “Contain toxicity”, etc. In addition to these risk based construction tasks, participants agreed that design and construction contingencies needed to be much higher; adding to the project cost estimate.

It was decided that even though site acquisition costs were low, the site should be abandoned in favor of another that cost more but involved less risk and offered a better value outcome for the owner.

Case Study 4

The table below is the (L2) function hierarchy cost breakdown for a new museum for which the estimate exceeded the budget allowance by approximately 10%. Costs for all activities associated with design and contracting were included proportionally against the key functions.

Function	% Cost	Priority
Provide displays	56.0	18
Provide public support	17.0	16
Provide operational support	4.0	14
Provide an Icon/Landmark	2.5	14
Provide education	3.5	11
Promote an interactive external museum precinct	3.0	10
Provide commercial opportunities	9.0	6
Allow for project risks	5.0	
	Total	100

Priority indicates function priority.

Workshop participants noted the low spending on the “Icon” function given its high priority and the high spending on “Provide commercial opportunities” given its low priority. Being able to see at a glance the cost and priority of functions permitted participants to propose ideas that resulted in the project being brought back to budget.

Case Study 5

The estimate for a proposed mineral processing plant had blown out. The project owner wanted to reduce costs by almost 20% in order to maintain an approved funding arrangement but without compromising production profits. The total estimate for the project was broken down at (L3) on the function hierarchy. The table summarising costs at (L2) is in order of % cost, not functional importance.

Function	% Cost
Manage project	18.4
Extract concentrate	15.3
Allow for risk, contingencies and overheads	12
Refine concentrate	11.3
Crush and grind ore	10.7
Accumulate minerals	10.1
Deliver ore	8.3
Provide infrastructure	3.9
Total	100

Workshop participants, particularly the project owner, noted that less than 50% of the estimate was allocated to the key functions which were to process and accumulate minerals. It was also noted that risk and management functions accounted for more than 30% of the estimate. Apart from these issues, participants discovered at the 3rd level of function hierarchy that part of the extraction process involved treating poor quality ore that did not provide a return. Careful examination of functional priorities and cost allowances resulted in savings of around 20% or nearly $30M.

Conclusions

Project owners know what service functions their project must accommodate and the professionals they employ are able to give them a total cost estimate but they may not be aware of how much of the estimate is allocated to each function and in particular, to functions they may not see as core service functions.

Most projects have a purpose: e.g. library, museum, hospital and it is implied that all functions necessary to carry out the purpose are built into the project; but how are these functions priced within the project estimate. Are they funded in accordance with the project owner's priorities and are all of the functions being funded recognised in the cost breakdown?

Take for example the function of "Image"; it is often not acknowledged by owners or professionals as a separate function and yet for some projects it may be one of the highest ranked functions needing to be accommodated. The total cost of the "Image" function can be made up across numerous building elements including external and internal adornment, artwork, quality and exclusiveness of materials and finishes, provision of closed versus open office space, the level of comfort provided for occupants and visitors, the size of spaces, the provision of advanced building management and services technology etc, etc. When the QS is able to separate out from building elements the total cost of all items that can be described as contributing to the "Image" function, the amount may surprise some project owners and funders.

The five case studies outlined above all resulted in improvements in value of between 6% and 20%; made possible because the total project estimate was broken down across the functions being accommodated and/or funded. Participants were able to identify inconsistencies in the allocation of costs and inconsistencies in the relevance of functions when compared with project objectives.

Activity based funding of assets would resolve these questions and as already implied a team effort would be needed to achieve it. It is imperative that the CEO or agency head/government treasury official, is involved; not just because they may be responsible for the delivery of services but because they have a responsibility to get the best value outcomes on behalf of shareholders or taxpayers. They need to champion the costing of projects by function and demand that in addition to other cost management procedures, the costs of all functions to be accommodated or funded should be stated.

A value professional is best equipped to work with key stakeholders to agree what the functional requirements are and their relative priorities. The QS knows how the elemental costs for the project were built up but they generally roll their eyes if asked to break down a project estimate in terms of functions. If they agree, it requires significant effort to achieve a reasonably accurate breakdown. For projects where I have successfully managed to get functions costed, the quantity surveyor has worked with me to make an assessment of how the elemental costs should be allocated. Microsoft Excel™ or similar can be used to collect the costs of (L3) functions and roll them up to the summary level (L2) but it is not an ideal situation!

Collecting costs by function could be made easier for all concerned and be available as standard input to a VM workshop if database software applications used by quantity surveyors included the feature. If key functions (provided by the VM professional in cooperation with stakeholders) could be entered into the application database as a dropdown list, then the QS could assign each elemental cost proportionally across all of the listed functions as appropriate. The good judgment of the QS would still be pivotal in accurately allocating costs but the software could automatically amalgamate costs in the form of a costed list of functions.

To my knowledge this capability within QS software tools is not currently available; perhaps someone reading this paper may come up with an idea that will make it a complementary method for estimating project costs, i.e. activity (or function) based estimates.

I advocate the function hierarchy be developed down to (L3) where the total estimated costs should be appropriately allocated to the functions. Taking the function hierarchy down to this level appears to be adequate and not too arduous for the stakeholders, facilitator and quantity surveyor to work with. For example:

L1	Why does the project exist?
L2	How will this be achieved? (usually between 6 and 10 key functional outcomes)
L3	How will these be achieved? (usually between 2 and 10 outcomes for each of the (L2) functions. This means the total cost could need to be broken down into somewhere between 12 and 100 functional cost items but it is usually around 20 to 30 items)

The (L3) costs need to be summarised up to (L2) and the functions at (L2) should be prioritised by stakeholders as illustrated in the case studies above. It is not appropriate to include risk functions in the prioritisation but costs incurred in managing risk need to be accounted for.

If the cost of significant projects were broken down in terms of functions as a matter of course it would assist VM professionals to highlight function costs and allow workshop participants to not only see at a glance where improvements in value may be possible but also to assess whether costs allocated to each function is appropriate. Is it not worth some small additional professional fees to cost functions so that project owners and stakeholders know within a reasonable margin of error the cost of all the functions they are paying for?

References

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