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Strategic Asset Management

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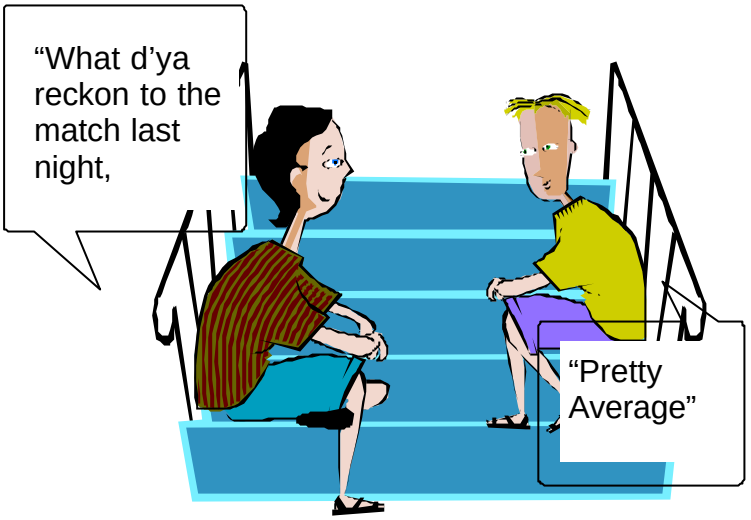
Counter-Intuitive Propositions



It is hard to divorce the way we use words in common conversation from the specific way that we may need to use them in business – and the word 'average' is a good example. Being average is just not good enoough: striving to be 'better than average' is part of our psyche. But when it comes to managing assets, the same attitude can lead to wastage on a major scale.

Pretty Average, page 688

And while we are on the subject of counter-intuitive propositions, let us look at a few more:

Life cycle analysis is at the heart of good asset management, so we should be applying it to all assets, right?

Modelling Footpaths, page 690

Could your asset holdings be an indication of your bankruptcy potential?

Dr Altman's formula Page 692

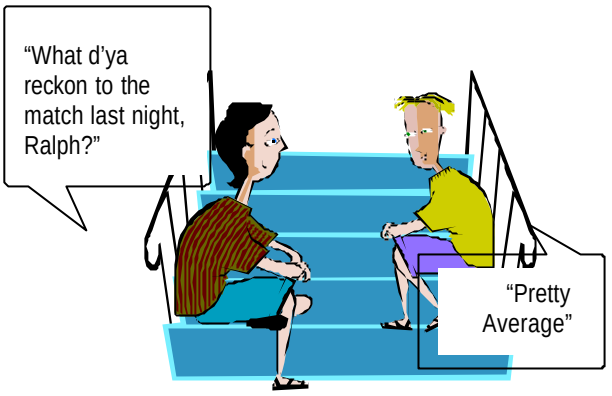
Strategic Decisions are made at the top. But what if they are not? What are then the implications for asset management?

The Emerging Third Wave Organisation, page 693

Researched and written by Dr Penny Burns, AMQ International.
Published fortnightly. Subscription, Comment, or Inquiries to

AMQ International
PO Box 75 Salisbury South Australia
Tel 618 8281 5795
Email: sam@amqi.com Website: www.amqi.com

"PRETTY AVERAGE"



We do not need to delve into the difficulty of knowing whether we are talking about the mean, median or mode, the weighted arithmetic or the geometric average to get ourselves into strife. We can get into trouble far easier than that!

In everyday parlance, "Pretty Average" often denotes, in reality "Pretty Poor! (as in the above illustration). In simple terms— "average" is not considered good enough.

But when we are monitoring PORTFOLIO CONDITION

Average is exactly what we should be aiming at!

We certainly would not want to aim lower than average – that would result in service quality deteriorating below the desired level.

But to aim at more than average is equally bad. To see why, and just how easy it is to put billions of dollars at risk , consider WDRC (Written down replacement cost)

What would be the WDRC %age for a Perfectly Managed Portfolio?

Well, a perfectly managed portfolio would be one where assets were maintained well and replaced at the appropriate time:

- not so late that service quality fell below the desired community level and
- not so soon that renewal costs were higher than they needed to be.

In such a perfectly managed portfolio, each individual asset or asset element would decline in value until its written down replacement cost was zero. It would then be replaced. OK, so far?

This would result in a situation where some assets or asset elements would be brand new, some close to renewal. If we assume that there is a fairly even spread of age throughout the portfolio, half of the assets would be less than halfway through their life, and half of them would be more – on average,

the perfectly managed portfolio, as a whole, would even out at a written-down replacement cost of 50%.

WHAT WOULD HAPPEN IF WE AIMED TO 'IMPROVE' THE WDRC PERCENTAGE ABOVE 50%?

The only way we could do this would be to replace assets sooner than they needed to be replaced – discarding valuable remaining service potential – waste!

If we were to replace an asset or asset element when it was, say, 75% depreciated rather than 100% depreciated, this is equivalent to reducing the service life by 25% - and increasing the capital cost by 25%!

Now consider the following statement recently seen in an annual report:

> "The written down value is $7.3 billion, equivalent to 65% of replacement value. This percentage should be about 75% for a well managed road network, indicating that the condition of Local Government roads is well below the level required by good road management practice." *(my emphasis)*

What's wrong with the statement above?

(1) The written-down percentage for a well managed portfolio will tend to 50% *NOT 75%!*

(2) At a written down replacement cost figure of 65% , the portfolio is in overall good shape

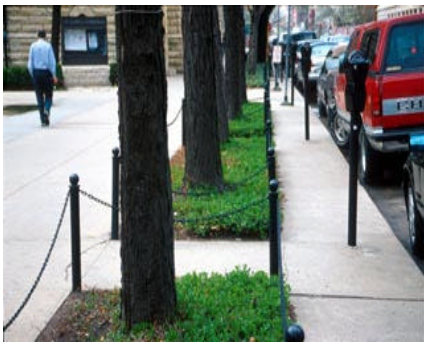
(3) Aiming at 75% WDRC is equivalent to deciding, unilaterally, to reduce the service life of the roads by 25%

(4) A written down value of $7.3 billion which is 65% depreciated equates to a Total Replacement Cost of $11.1 billion. So to waste 25% of this portfolio incurs an extra cost of $ 2.8B.

(5) And $2.8 Billion is a lot of money to waste for mistaking the nature of averages!

To comment on this article: go to discussion forums at www.amqi.com/forums

Modelling Footpaths



Lifecycle analysis is fundamental to asset management, so it is probably taken for granted that everything should be subject to a lifecycle analysis.

The fact that almost *anything can be done* – at a cost! – doesn't mean that *everything should* be done.

It is always worth modelling when the results give us information that

- Enable us to take corrective action that we would not otherwise have been aware of
- Allow us to better plan our funding and activity, and
- The improved results are worth the cost of investing in, and sustaining the models, so...

Should the lifecycle of footpaths be modelled?

The NO Case: A discussant on the www.amqi.com /forums discussions suggests maybe not. His comments are worth sharing. He writes:

> "I am not aware of any footpath lifecycle models but would be interested in any work already carried out in this area. I have looked into this subject briefly and found that the development of such models has a couple of barriers:
>
> **1. *Too many variables, with too much unpredictability***
>
> Generally the failure modes of footpath (cracking & trip steps) are caused by factors external to the nature of the footpath pedestrian/ bicycle traffic. These factors include large or inappropriate trees in nature strips, vehicle loadings or underlying soil types. These factors can be hard to model or predict (with the exception of having an indicator for areas with expansive soils). Tree root damage can depend on seasonal weather, for example a number of dry weather years can result in trees sending their roots up along the surface in search of water, therefore trees that may not normally cause a problem would then be lifting footpath. Vehicle loading is also unpredictable in nature.
>
> **2. *Too low a benefit***
>
> Footpath networks are generally valued much lower than a road network and as such it is hard to justify the amount of work necessary for developing and maintaining accurate life cycle models.
>
> ***3. Too high a cost***
>
> The increased cost of gathering information on external factors such as the amount of footpath adjacent to inappropriate footpath. The added cost for gathering this information may be more than the advantaged gained."

If not modelling, then what?

The writer suggests:

> "I have found that by using existing condition assessments to give footpath segments an overall rating, then estimating remaining life based on weightings calculated from these ratings will give a generally effective estimate of overall network condition. I think as far as footpath goes the important thing is to monitor the network condition consistently and therefore be able to calculate a linear rate of deterioration over time based on current funding and maintenance practices."
>
> "I believe it is important to not get too caught up in the modelling process for footpath, but rather monitor the network condition over time and adjust maintenances practices to ensure that, at the least, the network is not deteriorating over time.
>
> Of course with the on-going increase in litigation over footpath related incidents it is very important to be aware of the specific condition and have adopted management plans so that you have a good defence against any possible legal actions.
>
> If anyone else has info on this topic I would be very interested in hearing any work already done in this field"

Ed:

1. *He does not suggest how the weightings are to be calculated, so I am guessing this is an intuitive judgement based on experience – when it comes to judgement, the human brain is a pretty effective modeller! Even the most sophisticated pavement modelling systems still yield results that need to be checked in the field! And when the model results differ from the human judgement, what do we accept?*

2.. f you have information on modelling footpaths, in particular in calculating the degradation rates under different conditions, please add your comments at www.amqi.com/forums]

Not Quite the YES Case—but modelling nevertheless

- *What lives are you getting from asphalt footpaths compared with concrete tile? Are these shorter or longer than pavings?*
- *Does the relativity change with different circumstances—eg , more traffic, established street trees, new street trees?*
- *In footpaths subject to a lot of public utility or builder activity, are some footpath surfaces better than others? How do you know?*

It these answers are not known, then modelling future renewal or maintenance requirements is going to be difficult, to say the least.

This situation may call for a **different type of modelling** — *data sampling and analysis, experimentation,*

Dr Altman's Formula

"There was considerable hubbub in the business world in 1968 when Dr. Edward Altman of New York University published a paper in the *Journal of Finance* titled "Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy." Dr. Altman's paper is still widely read (and used) and the Good Doctor brought it up to date in the year 2000. What Dr. Altman did was to create a simple formula that generated a single number—and that number was a pretty reliable predictor of whether or not a company would go bankrupt.

Some math (don't be scared!) I'm not going to delve into the details of Dr. Altman's multivariable discriminant analysis, sampling methodology, and so forth. Just the results, and the results are pretty startling.

Dr. Altman's formula is simple. It consists of five ratios, a ratio being of course one number divided by another and expressed as a percentage. Each ratio is multiplied by a coefficient and the results are then added together to arrive at a "Z-score." His formula is:

$$3.3X1 + 0.999X2 + 0.6X3 + 1.2X4 + 1.4X5 = \text{Z-score}$$

where X1 through X5 are the five ratios expressed as percentages.

Now here's the thing: First, you want the Z-score to be higher rather than lower, because a low Z-score means you're likely to go bankrupt. And second, *in four out of the five ratios, "total assets" is the bottom term.*

In other words: ***The higher your investment in assets, the worse your future.*** If you were a private company, you might be facing bankruptcy. Another thing for your Asset Manager to worry about, and another reason for his allergy!"

The above is an excerpt from a paper "Assets and Allergies: Or, Keep those costs down, please!" by Ken Harlow, Brown and Caldwell.

You will find it on his asset management site: **http://www.bcwaternews.com/AssetMgt/**

Just uploaded: Part 3 of a series of very informative articles on "Setting Customer Service Levels" by Kevin Young, Hunter Water and Ken Harlow, Brown and Caldwell.

Also "Fitting your capital program to your customers's needs: the business case evaluation", being a detailed case study of the Sacramento Regional County Sanitation District's use of Business Case Evaluation (BCE) methodology to evaluate options for a new interceptor and pump station to provide additional conveyance capacity.

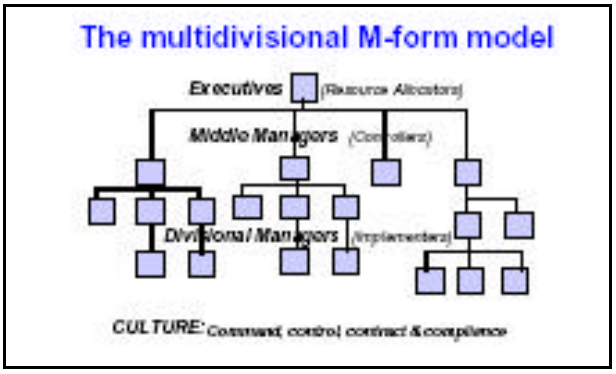
all articles are so clearly and simply written, that you don't have to be a water asset manager in order to profit by them. Have a look!

The emerging third wave organisation

: How organizational structure is changing to meet the needs of the new information age, where flexibility, speed of innovation, a service and customer focus, and knowledge sharing and management are more important than narrow economic efficiency and economies of scale.

> The following is an excerpt from "Management Accounting, December 1997" (The Chartered Institute of Management Accountants, London), by Jeremy Hope and Rob Fraser. Jeremy Hope has produced several books about this new trend, including "Competing in the Third Wave" and "Beyond Budgeting".

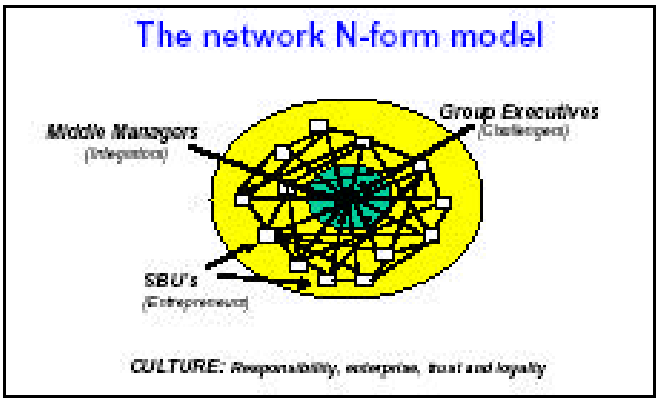
If your agency has been considering, or adopting, balanced scorecard techniques, zero based budgeting, activity based budgeting and other budget improvements, you will be interested to explore "Beyond Budgeting". The authors argue that as organizational structure changes, the accounting system needs to change with it. We will look at the Beyond Budgeting arguments in the next issue, and what they may mean for asset management. Before doing so, however, it is interesting to consider the radical organizational changes that may be in store for organizations, even within the public sector. After all, if large companies – with large bureaucracies – can do it, what is there to stop large infrastructure organizations?



"Just as the multidivisional ("M-form") structure set the standard for the industrial age, a new managerial model is now emerging that is likely to become the standard for the information age. In the "M-form" model (see figure 3), pioneered in the 1920s by US giants like DuPont and General Motors, top management is the fountain of knowledge, the strategist, and the resource allocator; middle managers are the controllers; and the front-line managers are the implementers.

These structures were established to support the rapid growth of second wave companies as they expanded into new products and markets, and helped them to reduce the complexity of managing multiple strategies. These structures were created by devolving assets and supported by vertical information systems to enable top management to allocate resources and control their use.

The so-called 'M-form' was right for its time (1920s to 1970s) because capital was the key strategic resource. But in today's business environment the model is too bureaucratic, rigid and unresponsive, and it creates a culture that is risk averse and gives a false sense of security.



Today we are operating in a highly competitive and rapidly changing business environment and, as we have already noted, the key resource is no longer *financial,* but *intellectual* capital. In the emerging model – let's call it the "Nform" (see figure 4) - front-line managers are the entrepreneurs, strategists and decision-makers, constantly creating and responding to new opportunities for the business; middle managers are the horizontal integrators building competencies across the organisation (and with external partners); and top managers provide inspiration and a sense of purpose while frequently challenging the status-quo. In contrast to the 'M-form', this is a model that is in tune with the times. It has a softer, more organic form that is market focused, lean and responsive.

Examples

ABB,[Asea Brown Bovari] recently voted by its peers as Europe's most admired company, has adopted many of the essential features of the 'N-form'. With over 200,000 employees, it has created a federation of some 1,300 distinctive and separate businesses, each with multiple profit centres. It has a very lean HQ (about 150 people) and is highly decentralised. R&D, for example, is devolved to operating units, but it is leveraged horizontally. Each unit manages its own finances as if it were an independent company, but information across and up-and-down the group is open and fast. By adopting the 'N-form' model, ABB has created a widely distributed network of entrepreneurs thus improving responsiveness while retaining the benefits of scale through mechanisms for horizontal integration.

Another outstanding example of the 'N-form' is ISS, a Danish contract cleaning company. The company's success is built on its respect for its people and the belief that, at whatever level in the organisation, people will make the right decision if they are properly informed. Cleaning supervisors are encouraged to run their operations as if they were independent businesses. Once thoroughly trained, supervisors receive financial reports by cleaning contract, and, because they are at the front-line, treated as professionals and rewarded on team profitability, they exercise a control over costs that is far tighter than a financial controller could ever exercise remotely. With this philosophy, ISS has grown from a local office cleaning contractor to a multinational business with a $2bn turnover and 115,000 employees."

Question: Could the Network N Form better suit your organisational structure, and how would asset management fit within?

If you would like to read more about this approach, you can find the entire article at http://www.cam-i.org/columns/budgeting.pdf