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Advisory Panel

SAM now has an Expert Advisory Panel to ensure that we keep up to date with issues and bring you the best information possible, in the most practical way we know how.

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Facilities and Assets Group,
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If 2% is the Answer, What's the Question?

Industry Maintenance Averages

The Overseas Property Group, like many other organisations, uses an "industry average" of approximately 2% of the value of property that should be spent on maintenance. In their case, this is modified by the qualification "assuming that the property is in reasonable condition at the start of the process"

Rawlinsons' "Australian Construction Handbook" is a widely used source of Australian building costs. The 1998 edition gives an annual maintenance cost of \$23 per square metre for a low-rise office building, which Rawlinsons' estimate has a construction cost of \$1200 per square metre. This equates to an annual maintenance cost of about 2% of Gross Replacement Value.

The Property Services Council of Australia recommends that maintenance should be within the range of 2-4% of building replacement value per year, and the Sherman-Dergis Model (Harvey Kaiser "The Facility Manager's Reference") predicts 2.6% GRV over a 50 year life.

Some even quote the Victorian Audit Commission, which in 1993 estimated the cost of holding the State's stock of assets (ignoring finance charges and employee costs) at 4% of the value of the assets held.

The excellent suggestions of the panel are gratefully acknowledged but responsibility lies with Dr Penny Burns, the Editor and Director

**This “industry average” -
Where does it come from?
and
What does it mean?**

Now, at least I know the source of the last figure, for I calculated it! But it worries me when I see it being used to support a claim for an annual maintenance because it refers to a long term average for renewal of the asset, plus security, cleaning and maintenance (and the maintenance bit was a guess!)

So it is worth asking where is this “industry average” documented? (as distinct from stated or claimed?). Where is it justified? What does it mean?

Maintenance is so ill-defined

Maintenance is so ill-defined. At one end of the spectrum it shades into cleaning and at the other end into asset upgrade and renewal. Some maintenance budgets include all the small items that do not conveniently fit into other budget lines. And in some cases, as noted during the Victorian Audit Commission inquiry, agencies package what most would call maintenance (e.g. painting) into a “capital” item. “Benchmarking” actual maintenance costs is thus fraught with interpretation problems, let alone the problem of knowing whether what was spent was what “was needed to be spent” If we can’t define it, can we hope to measure it? If we can’t measure it, how can we hope to argue for funding on this basis?

We could work on getting a measurable definition of maintenance. But is this where we should be putting out efforts? There are dangers to determining what a budget allocation should be – and THEN deciding how it is to be spent, rather than determining what needs to be spent related to service delivery requirements and THEN deciding the budget!

**“Lump Sum %” Maintenance budgets
have the following difficulties:**

- They provide no guide as to priorities in spending (and thus permit individuals to use their budget allocations to follow personal whims rather than corporate goals)
- (related to the above) A 2%, or any percent, approach fails to give any indication to management of what will happen if the budget is not provided.
- It is ‘input’ focussed rather than ‘output’ focussed.

Tried, But Not Effective

Management has, by and large, failed to be convinced by a budgeting approach that equates to “give me x% of the total budget and leave me to get on with my job”. Given today’s focus on accountability, management is unlikely to view this approach any more favourably in the future. But perhaps the best reason for abandoning the global x% request approach is this:

An increased percentage of GRV devoted to maintenance may say one of the following:

- (1) **More maintenance is resulting in cost effective asset life extension, greater reliability of assets and better availability, Or**
- (2) **Assets which are past their “use by” date are being patched up and repaired resulting in large maintenance bills but less effective assets and service. Or**
- (3) **Assets are being maintained at an unnecessarily high standard relative to service requirements**

Can you tell which?

Conclusion:

If 2% is the answer, perhaps we have not thought enough about the question!

Is there a role for 'industry averages'?

Are there times when an 'industry average' (whatever it may mean) is relevant and useful?

It would be nice to be able to say yes, after all, decision makers are sick of being told that the 2% estimate is flawed "but you will have to wait 3 years for a better answer!" So let's have a look at the possibilities.

When a quick 'order of magnitude estimate' is required? Possibly!

What are the choices? You can provide an estimate based on your own actuals for similar assets. If you don't have similar assets, you can base your estimate on somebody else's experience with the new kind of asset. If neither exist, then the 2% figure is probably as good as you are going to get. But be aware that the initial quality of design, materials and construction will affect the level of future maintenance. To ignore this by taking a standard maintenance figure regardless is to diminish the discipline of life cycle cost thinking.

Simple figures for forward planning purposes? Possibly!

However, even if you are asked what amount should be allowed for maintenance agency wide over, say, the next ten years, you can do far better than use a 2% figure.

You can start from the average maintenance/replacement cost figure for the last few years and do some simple projections of change in portfolio size, complexity and age over the next 10 years. Add on a figure for asset renewal developed from simple life projections and estimate asset modifications based on expected rate of change of organisational structures, demand and environmental conditions.

And none of these individual, relevant, estimates need take very long! (The current SA Local Government Infrastructure Study shows that broad scale planning

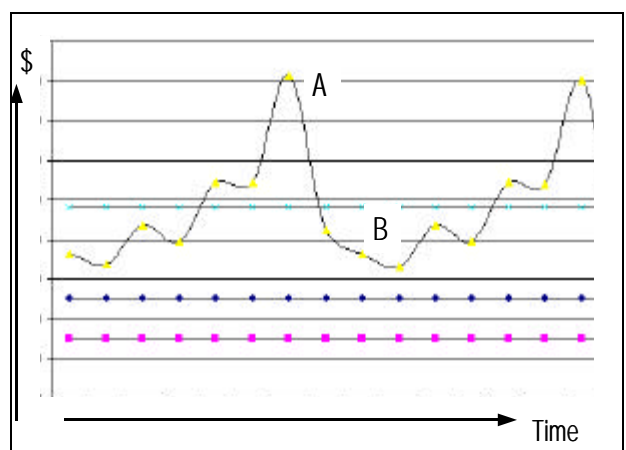
data tailored to an individual council can be put together fairly quickly, in some cases, just days.)

Benchmarking? Possibly!

You can use maintenance costs for benchmarking purposes if you are

- Maintaining similar assets;
- Of a similar age;
- In a similar condition;
- For a similar purpose;
- In similar cost circumstances.

In general, benchmarking over portfolios does not yield information that can be used to improve performance. Applied to individual assets it might do. However, consider the following chart which plots asset renewal over time, even if two agencies had identical assets, but one set was older than another, the renewal ratio could be very, very, different! Compare (A) and (B)! Even where it works, all that cost benchmarking does is *raise questions about efficiency*. It does nothing for the more important corporate objective of effectiveness! So you may wish to think twice before investing many resources in such comparisons.



But for Annual Budgeting? Never!

Reliance on global estimates may be one of the reasons why the maintenance budget is not regarded as a high corporate priority. **There is a better way and it doesn't have to take forever.** (To be continued next issue!)

Performance Measurement can be harmful to your Agency's Health!

Warning 1: If you don't intend to know the worst – and to do something about it, don't waste your time measuring performance.

Warning 2: If your agency does not have a clear, well developed idea of its service delivery requirements, it is too soon to do performance measurement.

Warning 3: Measuring partial performance (particularly if linked to reward systems) can seriously distort outcomes.

Measuring Asset Performance, Part 2: Translating the Principles into Action

In part 1 we looked at the principles that should guide asset management measures. To recap:

1. Purpose:

Know what action you wish to take as a result of the performance you are measuring, for example:

- Focus on improvements in value for money
- Trigger management action
- Identify successes and problem areas
- Enable management learning (feedback)
- Support strategic management

2. Assign Accountabilities:

For every measure you adopt, you should know:

- Who is to be responsible for collecting the data (and to whom)
- Who is to be responsible for analysing the data (and to whom)
- Who is to be responsible for acting on the data (and to whom)

3. Avoid Excess:

This is not a job creation scheme. You will need a handful of key (strategic) agency output indicators (more than about 5-6 is probably too many) and about 3-4 key input ratios for each output indicator that will help you manage your asset portfolio to ensure that the agency performance targets are met.

Ok, How do we do it?

Translating Principles into Action

Strategic Indicators

These are agency performance indicators, which set the goals for asset performance achievement

What is important to your agency?

Say you are in the railway business and senior management has decided the key performance areas are

- Safety,
- Reliability,
- Timeliness,
- Cost and
- Customer satisfaction

Your key strategic output indicators should measure your performance in each area. You might have, for example,

Safety – 'loss of time' accidents as percentage of total working hours if your safety concern is the safety of workers; if it is the safety of passengers then you may choose 'reported incidents of danger or harassment to passengers' either as a proportion of trips or proportion of passenger traffic.

Reliability – this could be percentage of scheduled trips cancelled (if cancellations are your main concern) or it could be breakdowns per million operating hours if plant standby planning or risk management is significant for you.

Timeliness – This could be the elapsed time of all train trips as a ratio to the scheduled time.

Cost - This could be the average cost per passenger kilometre (or ton kilometre for freight lines)

Customer Satisfaction – This is where you pick up on all other elements that affect the customer (eg ride comfort, cleanliness, availability of trains when required, etc.)

For all the above, the agency would have targets. Actual performance would then be measured against the target level and the results presented as a ratio of actual to target.

Asset Related Performance Indicators Support the Strategic Indicators.

The nature of your business will determine how significant asset management is in the achievement of good agency performance. The role of the asset manager is, **first, to understand** and, **second, to record and act** upon the asset-related input ratio measures that impact on business performance.

Let's take just one of these performance indicators, **say timeliness** "elapsed time over scheduled time". (Note that this is related to "reliability" and will also have a bearing on "cost" and "customer satisfaction" – key strategic indicators need to be considered as a set, as a whole, and not piecemeal.)

The job of the asset manager is to see what can be done, through managing assets, to ensure that the agency meets its timeliness targets.

To do this the asset manager has to understand the relationship between asset performance and agency performance. He/she needs to know what to do to improve asset performance and to anticipate what may go wrong - and then see that it doesn't!

This is where asset management and **risk management** converge to improve agency performance.

Look at what ***might go wrong*** (assume we are talking about a passenger line)

Trains may not leave the platform on time because

- They got in late
- There are delays in clearing outbound passengers
- There are delays in boarding incoming passengers
- There are mechanical difficulties with the engine
- There are mechanical difficulties with other rolling stock
- There are problems with the track

Trains may leave on time but not arrive at the next stop on time because

- There are problems with the track (e.g. leaves or animals on the track) that causes the train to stop or to go slower than intended
- There are problems with the engines or rolling stock that causes the train to stop or to go slower than intended
- There are problems with the signalling equipment

There may be delays in clearing passengers because of the design of the station – modifications might be made to smooth the passenger flow. Difficulties with the engine may mean re-looking at maintenance procedures, at design, at operational practices, etc. However, before taking any action at all, the asset manager needs to know where the problem is and how serious it is. Not all of the above factors may be the subject of ongoing measurement.

Before choosing, the asset manager revisits the purpose of performance indicators, viz:

- Focus on improvements in value for money
- Trigger management action
- Identify successes and problem areas
- Enable management learning (feedback)
- Support strategic management

Let's see how this may work in practice.

Example: Timeliness.

Value for money/ Trigger for Action

Large delays are more costly than smaller ones; each single large delay incident has more impact on timeliness, costs and customer satisfaction than a small delay incident. So we may wish to record the distribution of delay incidents. We may decide that delays of up to 10% in scheduled time will be recorded as "business as usual" and that we want a mechanism that will definitely trigger an inquiry for any delay in excess of, say, 20% of scheduled time. This leaves a 'grey area' (more than 10% and less than 20%) that will warrant an inquiry at the manager's discretion.

Identify Successes and Problem Areas

Individual lines, or even line segments, could be the subject of measurement to determine which ones were working well (and could be used as exemplars) and which were not. For some performance measures, the higher (or lower) the measure the better, for others, we need to keep within limited bounds and avoid a measure that is 'too high' or, equally, 'too low'. So determine which kind of measure you are dealing with. When you are dealing with boundaries, a successful area is one that keeps within quite narrow boundaries. This increases reliability as well.

Enable management learning (feedback)

Rather than routinely reporting everything to management, good performance indicators have a "flag" system so that you can report by exception. "flagged" exceptions can have an automatic response if the corrective treatment is known.

Support strategic management

If delays are regularly occurring because of certain problems, eg engine breakdown, this needs to be addressed at the strategic level.

Important: Upper and lower bounds

Note: Input ratios don't have targets!

Targets apply to outcome performance measures only! It is a BIG MISTAKE to set input ratio targets because they destabilise optimum performance. Just look at the effect of headcount targets to see how true this is!

But you do need to have upper and lower bounds on what is acceptable performance.

Input ratios are monitored to see whether anything needs to be done to bring them back into line. There will be a normal range of fluctuation. (You may want to reduce this.) However, if you don't know what the current range of fluctuation is—the acceptable upper and lower boundaries—then you won't know *when the input ratios are out of line!* This means you won't be able to take appropriate timely action—and you will have wasted your time measuring in the first place!

In the next issue we will look at a range of performance indicators and measures being used by agencies as a guide to developing your own – and we will look at what can go wrong if you choose the wrong indicators.

From the Trouble-Shooter's Industry Casebook:

When Individual Performance Measures Give the Wrong Agency Result!

**A true story illustrating the importance of a focus on company outcome measures
—and not on individual input ratio targets**

The "V" Belt

The company kept detailed performance statistics. And the statistics showed that the "V" belt in their washing product was the cause of a high percentage of machine failures and call-outs.

The troubleshooter went out with the service vans to see the problem at first hand.

"We were working on a washing machine when I noted that the technician was fitting a different brand of belt to that used in the factory. Odd!

In later discussion with the Service Dept. chief, between unkind words about the factory belt, he said that they preferred this brand which they called the "fit and forget" belt as they'd used it for 5 years with only one known case of a problem.

What was this problem costing?

I did some quick sums. The "fit and forget" belt cost 10 cents more than the one the factory used. But in terms of warranty costs the 'cheaper' belt was costing us about \$1.10 for every washer produced. Switching to the new "V" belt would give us a net saving \$1.00 per washer—small enough, but with our production levels this amounted to **an overall saving (ie direct increase in profit) of over \$200,000 each year.**

I went back to the Service Department and asked what would be the cost if the belts were bought in factory-like quantities. The answer was "no more than 10% on the last time we quoted". (Obviously someone else had walked this path - I should have been wary -I wasn't).

Well this looked like a good way to kick off in a new position - remove an item from the top ten faults - have a better product - happier customers and save \$200,000 per year in the process.

Saving \$200,000 per year should have been a "lay-down misere". Right? Wrong!

Let me walk you along the path that I trod.

1) Engineering

Full of confidence I went to see the washer division's chief engineer - really great chap - dead straight - and a good engineer. I showed him the figures - he'd been aware of the problem but he'd not seen it quantified. I thought he could specify this "fit and forget" belt. But he pointed out that his performance would look bad if he was responsible for increasing "Factory Variable Cost (FVC)" the cost ratio by which he was evaluated.

I was disappointed but I did get him add it to the drawings as an "acceptable alternative" - a necessary step—and I moved on to ...

2) Purchasing

The purchasing manager was a really get up and go type of fellow. He could appreciate the advantages of the new belt but was also reluctant to take action. He said he could introduce a FVC saving immediately but if the cost of any item went up then he had to be prepared to be grilled unmercifully at each monthly meeting. Hence he was loath to do it. His primary yardstick was the FVC reduction target-

and if by his actions there was a saving in warranty it would give him no kudos. (all pain - no gain). No worries, I would talk to the ...

(3) Production Manager

He was also a conscientious operator. Now the factory belt as it came through the door had too hard a surface and would slip on the pulleys. Thus the special equipment people had built a machine that wire brushed the faces of the belt - scuffed them. I noted that the extra labour cost of this operation was about 10¢ per belt! Not only that but the special machine fouled the air with fine rubber dust with the result that the nearby lunch area was never used.

Hey, I thought, what an opportunity! Using the new belt would get rid of a particularly messy operation and save the cost of an operator. Great ?? Wrong, wrong, wrong! The production manager had a performance measure and it was the ratio of direct operators (good guys) to indirect operators (bad guys). Removing a direct operator would not allow any change in supervisors, forklift drivers etc. - hence the ratio was going to go the wrong way. No joy here. But we had not given up yet, there was still the ...

(4) Divisional Manager.

At least the divisional manager would understand! Sure he did. His yardsticks were the collective sum of the other yardsticks - so the below deck logic applied at the top. Now he was also responsible for the warranty cost of the product. But being no fool he knew what his main yardsticks were - he had his grilling each month in front of the Board and he knew exactly what was important. Well, "money is where money is" I figured so next stop was ...

(5) Chief Financial Officer

After receiving a half hour lecture on modern costing I knew I was getting nowhere. So I naively asked if divisional managers could increase the FVC and offset this with greater warranty savings. "*Well I suppose if a divisional manager actually wanted to increase the FVC he could always come here to Head Office and make a proposal.*" Bingo! - there it was - this No.1 yardstick - Factory Variable Cost - was all pervading.

At this stage I was quite dejected. Fortunately we had a superb CEO who had the foresight to have asked me to sit with him and his key managers on an irregular basis and advise them on what they could do to improve quality. Hence I had a one-on-one with "God". I raised all this prefixed by "here's a story that I think might amuse you".

(6) The CEO

He was not amused.

This V belt problem was solved with one very terse phone call and he was justifiably annoyed that such a simple thing had to be resolved at his level.

However when he had time to reflect he realized exactly what the real problem was.

By over-emphasis on one of the goals (i.e. cost reduction) coupled with simplistic yardsticks he had unwittingly created a case of totally non-integrated management.

In reality all the ingredients were there for a totally integrated team

- 1) here we had really first class people - not a slacker amongst them
- 2) they all worked together in the same site
- 3) had lunch together and a beer on Friday nights.
- 4) they all knew each other's main focus (yardsticks)

Yet despite these very real plusses no one was able - or thought themselves able - to cross over some boundaries and do something that was patently in the interests of the company."

Ed: Why not take a fresh look at the performance measures that you are being rated on. Do they make sense from a corporate viewpoint. If not, how would you change things ?

The New International Asset Management Competitions

Aims

The aims of the International Asset Management Competitions were:

- To raise awareness of the benefits of asset management
- To recognise individual good work
- To increase ability by disseminating good practice examples

These aims remain for our New Competitions, but we are making it easier – and importantly, quicker, for you to participate

How to Enter (No cost!)

You may enter the New Competitions by

- Submitting relevant articles for the resource centre
- Identifying relevant weblinks
- Submitting glossary items in our new glossary section
- Organising a discussion forum

(see details under "Competitions" on www.amqi.com)

Award of the Month

Each month we will acknowledge all contributions to the website and select a monthly winner who will receive \$500 of prizes. **(\$200 annual subscription to "Strategic Asset Management", or a year's free extension if you are already a subscriber, plus \$300 book voucher for books of your choice**

Selection criteria

This is based, first and foremost, on how useful the information is for others. Then on resourcefulness, creativity, innovation, and sound practice.

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