



ROACE: Financial North Star to Maintenance and Reliability Operations

Richard G. Lamb, PE, CPA; Analytics4Strategy.com

Return on average capital employed (ROACE) should be the North Star for us reliability and maintenance (R&M) practitioners. First, it is one of several equivalent measures to evaluate how well a business uses its assets to generate earnings. Second, it is the measure of choice for firms whose production assets and facilities are a very large part of their total assets. We can easily find examples of how heavily such firms and their investors rely on the measure.

We see ROACE as a measure in annual reports. Shell states in an annual report, “We make regular use of this measure [ROACE] to evaluate our operations.” Statoil makes the same statement in its annual report and we could find others.

We see ROACE used as a measure by which firms are compared. In 2014, BMO (Bank of Montreal) Financial forecasted, “Majors such as Chevron, Exxon, BP and Total will probably see returns on average capital employed (ROACE), a key metric for investors, in the area of 9-12 percent in downstream by 2017. Shell will see its ROACE at 7 percent and Eni at around 1 percent.”

We see ROACE used as a reference point for industry performance. BP’s March 2014 Investor Update presentation hypothesized, “Rising costs and an increase into new large infrastructure projects across the industry has fed into higher levels of capital not in service. This goes some way to explaining the recent compression in ROACE.”

Other than navigating independently toward a common reference point, there is another reason why ROACE should be our North Star. Its underlying computation is an integration of the many line items of the income statement (excluding interest and income taxes) and the balance

sheet. Consequently, it is a central measure of business optimization such that, through it, R&M practitioners and senior management will arrive at the same conclusion from different starting points.

What this means to us is that we should judge our R&M operations through the lens of ROACE. When we propose changes and budgets to our operations, we will do so from the high ground of business optimization.

R&M strategy is rife with examples of needing to find business optimizations. For example, proactive maintenance is good, but comes at a cost such that not all proactive maintenance is equal in the eyes of ROACE. Another example is that taking maintenance expense up or down may not have the same direction of outcome for ROACE. Another yet is that an asset designed with lowest capital cost as a primary criterion may not push ROACE in the direction senior management is wishing for.

ROACE as an Analytic Framework

The header graphic shows ROACE as a workable analytic framework with which to search and design for business optimization. It shows that ROACE is the product of net profit margin (as a percent), before interest and income taxes (BIT), and productivity of assets.

Management's challenge to us R&M professionals is to ask ourselves how we can increase and sustain both sides, but as an optimization. The answers are in the boxes that roll up along each branch of the diagram. Some are result boxes. As we affect the others, ROACE can be influenced.

On the net profit margin side, the influencing boxes are revenues, cost of goods sold (COGS) and operating expense which includes the expenses of R&M operations and depreciation as the "expensing" of capital assets. On the productivity of assets side, they are revenues and average capital employed (total assets minus current liabilities).

R&M operations affect all of the boxes through one or more of their line items. For a given box the affect will be a little, somewhat or a lot. Furthermore, touching any one line item will have ramifications for others across the framework. It is up to us to find the pressure points to ROACE.

Working the Framework

The idea is to use the framework as a means to evaluate our R&M operations, seek the pressure points at which we can move ROACE by business optimization and design processes to do so. Subsequently, we use it to evaluate if the intended payoffs of change are actually being realized.

However, we do not immediately jump into the numbers. Instead, we first size up how the plant competes and wins. We extend the exploration to know the range and implications of production strategies, events and decisions to the plant's competitiveness. We will establish

how the breadth of R&M practices play upward through the issues of production and into competitiveness. Finally, we will think through how the three perspectives play together up through the ROACE framework.

Next we will gather the line by line details of the financials, establish for ourselves exactly what they encompass and install them in the framework. Of course, the numbers we gather will be the line items within the categories of the shown boxes.

It is important to note that the line item numbers to the boxes are readily available to an analyst who knows how to go get them. That is because they are the feed to the firm's financials and, therefore, recording the data in granular, accurate form is not an option.

Having looked outward, we now look inward to our R&M operations. This look can be shallow or deep; a choice for R&M and senior management to make.

At the shallowest, we look for readily apparent R&M strategies that will not require new organizational skills to execute. At the deepest, we will use data analytics, as the difference maker, to identify which aspects of R&M operations, if surgically focused, will truly effect the financials. We will also use data analytics to provide continual assurance to ourselves and plant management that the aspects of operations are being well executed and having the expected effects.

Go Forth and Discover

The findings of the ROACE thought process are virtually infinite from plant to plant. I leave it to you to work your own case. Maybe most important, is that management will see the R&M operation as exercising a "commercial mindset" and, in turn, learn to look at ROACE through the lens of R&M operations.

Related papers: [The Secret Is to Budget and Control Maintenance Opex Dimensionally](#) | [Setting the Budget for Maintenance Workload](#) | [Size Maintenance Craft Capacity on Forecasts, Not Backlog](#)



This work is licensed by Richard G. Lamb under a **Creative Commons Attribution 4.0 International License (CC BY 4.0)**.