

# **Effectiveness, Efficiency, and Adaptability**

## *The Three Keys to Performance Measurement*

*By Tom Coyne*

One of the great insights in my life was the realization that, when it comes to performance metrics, there are really only three categories, which are as applicable to a single cell bacteria as to a hunter/gatherer tribe eons ago on the East African plain, or to a modern corporation or government today.

Effectiveness measures the extent to which the results you have achieved match your goals. Setting these goals is another matter, but that is the province of leadership and strategy, rather than performance measurement. Suffice to say, that in an evolutionary context, goals should align closely with short and long term selection criteria (that is, the measures that are used to determine which agents live and reproduce, and which die).

Efficiency measures the amount of scarce resources used to obtain the results achieved.

Adaptability measures the change in Effectiveness and Efficiency for a given level of change in the agent or organization's environment. In an environment that never changes, this metric is meaningless. But virtually all environments change, at least over some timescale. Also note that, when it comes to adaptability, success tends to carry with it the seeds of later failure. One of our great failings as human beings is our reluctance to acknowledge the full implications of living in a world of complex adaptive systems. Due to their constant evolution, the causes of yesterday's success are impossible to fully understand, and unlikely to be replicable to the same extent in the future. Put differently, we must be cautious about drawing unchanging lessons from the past, particularly about cause and effect relationships. And yet this is precisely what our pride and natural cognitive biases tempt us to do. Few people or organizations are willing to fully acknowledge the extent of their own uncertainty (which, after all, is related

to the degree of fear we feel), or the role luck (more technically, randomness) has played in past successes. And so we naturally try to succeed again in the future, using the approach that worked in the past, with frequently disappointing and occasionally fatal results.

Perhaps the best antidote to this tendency is to subject any plan we make to a so-called “pre-mortem.” Assume the plan has failed miserably, and list the causes of the failure. Then adjust the plan accordingly, for example, by collecting different information, adding contingencies, or holding resources in reserve.

Note that effectiveness, efficiency, and adaptability are not necessarily financial or economic measures. In fact, since financial results (e.g., the profit earned by a company over a year, or the amount by which GDP grows over the same period) are only produced with a time lag, they are notoriously poor indicators if you are trying to manage an organization. In that situation, you need to seek out, or devise, leading and real time indicators, that provide you with more timely performance information.

Note also that there are tradeoffs between these three performance measures. For example, adaptability usually requires some degree of resiliency (the ability to absorb surprising changes without great disruption or failure) – e.g., the troops a general holds in reserve to deal with the unexpected surprises that occur in every battle and war. However, efficiency sees resources that are not currently used to pursue results as waste, and seeks to eliminate them. For this reason, many organizations that are admired for their supreme efficiency later prove to be unadaptable and fail when their environment significantly changes. There is no algorithm or optimal way to make tradeoffs between the goals you set for effectiveness, efficiency, and adaptability. In complex adaptive systems, leadership will always remain an art. That said, in my experience the best leaders have been the ones who recognized the inescapable limitations of forecasting and planning in a complex adaptive system, and consequently sought to maximize the resiliency and adaptability of their organizations, subject to achieving the levels of effectiveness and efficiency needed to escape selection – i.e., to survive over a given period of time.