Abstract:
Numerous researchers have attempted to define models to measure organizational performance. At the same time, other researchers have focused on the development of processes to improve organizational performance. In general, there are two types of organizational performance models. Type one includes self-assessment techniques: Some examples are: the Deming Prize, the Baldrige Award, and The European Foundation for Quality Management Award using the EFQM Excellence Model. Type two enables managers to define a set of measures to manage and improve the business. Some examples are: the Capability Maturity Matrices (CMM), the Performance Pyramid, the Effective Progress and Performance Measurement (EPM), the Balanced Scorecard framework. In addition to performance models, researchers have also developed processes to measure, control and improve organizational performance. An example is Sink and Tuttle’s Performance Management Process. In this paper, we will review the Balanced Scorecard and the Performance Management Process, and discuss the rationale for utilizing the Sink/Tuttle performance improvement process in conjunction with the Balanced Scorecard.

Introduction:
In a recent issue of Logistic Management, Francis Quinn argues that performance measurement must be done with four things in mind:
1. Measure the right things – the system must measure activities that directly add to an organization’s productivity.
2. Clearly communicate what will be measured – measures that are ill defined, and/or not communicated will not be used or understood by personnel.
3. Consistently apply the measures – measures should be applied consistently to all units of the organization; failure to do so will result in loss of support for the system.
4. Act on the measures – the measurement data must be used in a constructive way. Not using the data, or misapplying the data will have the same results – a lack of support for the measurement system.

While the article was referring to measurement of labor performance, the guidance can easily be applied to performance measurement of organizations. Applying the principles to a known, defined process can prove difficult; applying them to something as large and undefined as a complex organization can prove at best to be a daunting challenge. However, to truly understand, and thus be able to manage and improve an organization, managers must be able to measure and then act on the “right things.”
Background:

Sink and Tuttle defined a process for planning and measuring organizational performance. The work includes a process for performance improvement, seven broad measures (categories) of performance, and discusses various approaches to achieve organizational performance control and improvement. The seven measurement categories of organizational performance are: (1) effectiveness, (2) efficiency, (3) quality, (4) quality of work life, (5) innovation, (6) cost and prices, and (7) productivity. Sink and Tuttle link organizational improvement initiatives to organizational vision. That is, the organization must first define a vision and strategy, and link the measures to the vision. The process is continuous, and is applicable to all levels of the organization. Further, the process treats the organization as a system, where inputs and outputs are linked through an organizational transformation process.

Kaplan and Norton defined a Balanced Scorecard approach that measures four specific areas of organizational performance from differing perspectives: (1) Customer Perspective, (2) Internal Perspective, (3) Innovation and Learning Perspective, and (4) Financial Perspective. They further extended the Balanced Scorecard approach by: (1) linking performance measures to business strategy, and (2) discussing means to map business strategy to performance measures. The Balanced Scorecard is intended to provide top managers a “...fast but comprehensive view of the business.”

Why Should We Measure More than Financial Outcomes?:

In the past, companies focused on financial measures of performance, primarily because: (1) it was easy to measure, and (2) organizations are rewarded based upon this measure. However, it was noted that as organizations moved into the information age, and thus, based a great deal of wealth generation on intangible products such as knowledge and expertise, financial measures such as product cost (e.g., conversion of raw materials to a finished product) did not necessarily accurately measure the organization’s performance. Further, as financial measures are lagging indicators of performance, they provide little or no guidance as to inter-period decision making to improve business results. Finally, it has long been known that rewarding managers for achieving financial performances can lead to unintended results. For example, an organization can increase its current period profit by minimizing expenses such as investment in new product technology. While this strategy does increase near term profitability, it may have the unintended effect of leading to periods of un-profitability if competitors exploit product obsolescence that results from the decision to delay work on new products.

“Ghalayini and Noble identified eight general limitations of traditional performance measures, which are: they are based on a traditional cost management system; use lagging metrics; are not incorporated into a strategy; are difficult to implement in practice and tend to be inflexible and fragmented; contradict accepted continuous improvement thinking; and neglect customer requirements.” Integrated performance models tie performance metrics more closely to a firm’s strategy and long-term vision, and thus, result in a more comprehensive set of measures.

Both Sink and Tuttle, and Kaplan and Norton advocate the development of a comprehensive set of measures of organizational performance. Both include financial as well other measures of performance. Kaplan and Norton have developed the “Balanced
Sink and Tuttle defined a performance management process based on seven general categories of performance, and further define the approach to accomplish this purpose.  

**The Balanced Scorecard:**

In 1992, Kaplan and Norton developed the “Balanced Scorecard.” The Balanced Scorecard was the result of a one-year study of 12 companies. The study, conducted by the KPMG Nolan Norton Institute, resulted in the Balanced Scorecard - a system that can be used to translate “…an organization’s mission and strategic objectives…into a set of performance measures.”

In a single report, the scorecard provides management with broad measures of business performance. The scorecard includes “…many of the seemingly disparate elements of a company’s competitive agenda: becoming customer oriented, shortening response time, improving quality, emphasizing teamwork, reducing new product launch times, and managing for the long term. Second, the scorecard guards against suboptimization.”

A key goal of the scorecard is to communicate and help implement an organization’s strategy. As shown in Figure 1, the Balanced Scorecard defines four measurement perspectives: (1) financial, (2) customer, (3) internal business process, and (4) learning and growth. The Balanced Scorecard is “…intended to reflect an integrated set of cause-and-effect relationships between outcomes (lag measures) and the critical drivers (lead measures) of those outcomes.”

![Figure 1. “The Balanced Scorecard Links Performance Measures (Kaplan and Norton, 1992).”](image-url)
Kaplan and Norton’s Balanced Scorecard attempt to link four distinct perspectives to measurement categories (Table 1). These four perspectives actually answer four important business questions, which when taken together, provide a comprehensive indicator of performance.

**Table 1. The Balanced Scorecard links perspective to measurement categories.**

<table>
<thead>
<tr>
<th>Perspective</th>
<th>Question</th>
<th>Business Process Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>How do customers see us?</td>
<td>Time, quality, performance and service, and cost</td>
</tr>
<tr>
<td>Internal Business</td>
<td>What must we excel at?</td>
<td>Cycle time, quality, employee skills, and productivity</td>
</tr>
<tr>
<td>Innovation</td>
<td>Can we continue to improve and create value?</td>
<td>New product launches, customer value, and operating efficiency</td>
</tr>
<tr>
<td>Financial</td>
<td>How do we look to Shareholders?</td>
<td>Income, expenses, assets, liabilities…</td>
</tr>
</tbody>
</table>

In 1996, Kaplan and Norton linked the scorecard with the management of strategy. The framework for action consists of four processes:
1. Clarify and translate vision and strategy.
2. Communicate and link strategic objectives and measures.
3. Plan, set targets, and align strategic initiatives.
4. Enhance strategic feedback and learning.

In 2000, Kaplan and Norton developed an approach to map business strategy to the Balanced Scorecard. “Strategy maps show how an organization plans to convert its various assets into desired outcomes.”

Figure 2 shows an example of this mapping approach. Strategy maps are based on the Balanced Scorecard, so the main categories included in the map are the four perspectives shown in Table 1. The map links each of the perspectives, and attempts to graphically depict how performance of one measure in a perspective category will affect a measure or measures in another perspective. All improvements should be mapped to the organization’s business goal or vision.
In a review of research conducted on the Balanced Scorecard, Salterio and Webb conclude that the Balanced Scorecard does a good job of clarifying and translating vision and strategy, and communicating and linking strategic objectives and measures. Further, the scorecard does a fair job of enhancing feedback and learning. However, the Balanced Scorecard performed poorly against planning, setting targets, and aligning initiatives. Because of poor performance in this last area, organizations should apply some other method to ensure that the area of planning, setting targets and aligning initiatives is performed well. Kaplan and Norton note that scorecard measures can be deleted when they are no longer useful, or better measures come along. Salterio and Webb caution that the practice of adding and deleting scorecard measures makes it difficult to detect cause-effect relationships, a key to successful use of the scorecards.

**Sink and Tuttle’s Organizational Performance Management Process:**

Sink has stated that organizational performance can be measured using seven broad categories. Table 2 shows these measurement categories, and their associated definitions. These measurement categories are linked to the way that Sink and Tuttle view an organization – as a system that receives inputs and then adds value that results in outputs. These categories form the complete set of measures that could be applied to a system.
### Table 2. The Seven Measurement Categories of Organizational Performance.

<table>
<thead>
<tr>
<th>Measurement Category</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness</td>
<td>The degree to which a system accomplishes what it should accomplish.</td>
</tr>
<tr>
<td>Efficiency</td>
<td>The degree to which the system utilized the correct things.</td>
</tr>
<tr>
<td>Quality</td>
<td>The degree to which a system conforms to requirements, specifications, or expectations.</td>
</tr>
<tr>
<td>Profitability</td>
<td>The relationship between total revenues (or in some cases, budget) and total costs (or in some cases, actual expenses).</td>
</tr>
<tr>
<td>Quality of Work Life</td>
<td>The way participants in a system respond to socio-technical aspects of that system.</td>
</tr>
<tr>
<td>Innovation</td>
<td>How well the organization does at coming up with new, better, more functional products or services.</td>
</tr>
<tr>
<td>Productivity</td>
<td>The relationship between the outputs generated from a system and the inputs provided to create those outputs.</td>
</tr>
</tbody>
</table>

Sink and Tuttle have stated that managing performance includes five dimensions:\(^{11}\):

1. Creating visions for the future.
2. Planning – determining the present organizational state, and developing strategies to improve.
3. Designing, developing and implementing improvement interventions.
4. Designing, redesigning, developing, and implementing measurement and evaluation systems.
5. Putting cultural support systems in place to reward and reinforce progress.

At the core of the Performance Management Process (Figure 3), is the view that the organization is a system. The management team needs to define a strategy and a vision for the future, and then assess the present performance against the resulting goals. They can then develop improvement approaches to move from present performance, to an improved state of performance. And, they also need to put in place a performance measurement system to help control and improve the organization.
Figure 3. The Performance Management Process (Sink and Tuttle, 1989)

Sink and Tuttle view performance measurement and improvement from a systems perspective. That is, the organization, either at the top-level, or any other level can be viewed as a system as depicted in Figure 4. At the core of the system is the Organizational System that takes inputs from external sources, and transforms these inputs into useful outputs that are distributed to an external system. To effectively control and improve the organization, the management team must measure performance, and then take actions that result in improvements. As Figure 4 shows, the management process functions in a counter-clockwise fashion. Results of actions taken will be measured and acted upon by the manager or team.

By viewing the organizational control and improvement process as a system, management can determine what internal changes they can make to yield performance improvements. Conversely, because organizational boundaries are defined, it should also
be apparent when external systems are causing internal problems, and with this knowledge, the manager or team can take the appropriate steps to improve performance.

Figure 4. The Virginia Productivity Center’s Management Systems Analysis (Sink and Tuttle, 1989).

Sink and Tuttle recommend using a five-step improvement process to characterize, control and improve organizational performance (Figure 4). Step one involves performing input/output analysis to understand the boundaries of the organizational system – that is, what is internal to the system, and where and from what entities inputs are received, and likewise, where and to what entities outputs go.

Sink and Tuttle suggest that each organization (or entity in the organization) under study perform an input/output analysis to characterize inputs and outputs, and to define system boundaries. The organization can then determine the process by which they transform inputs into outputs. Further, the organization will have knowledge of factors that affect performance (either adversely or beneficially) over which they have no immediate control.
Here’s a brief example that shows the usefulness of this type of analysis. Assume that a supplier\(^a\) has a poor record of delivery. Delivery performance can be affected by several factors. One could be the organization’s ordering within the supplier’s stated lead-time. If it is determined that performance is suffering because the organization cannot adequately forecast demand, and thus, place orders on time, this is within the scope of the organization’s immediate control, and can be addressed by internal performance improvement efforts. On the other hand, if the supplier has internal problems that cause poor delivery, improving the organization itself will have no positive effect on performance. Thus, by characterizing performance as being either internal or external to the system, the organization can not only attribute current performance to a specific cause, but can also determine areas where internal improvement will prove beneficial. Knowledge that performance shortfalls are caused by an external entity enables the organization to save valuable resources that would have been inappropriately spent on internal improvement efforts. Simply put, this step will help the organization determine where to focus their efforts.

Step 2 of the Management Systems Analysis Process requires that the organization define improvement techniques and goals. These goals should guide the organization. The goals should be updated as performance is assessed and new issues are brought to light, and whenever initial goals are met. Improvement techniques should be process changes should result in performance improvement. The process should be continuous.

Step 3 involves defining the measurement system outputs. These outputs are the measures that the management team will use to determine system performance. Essentially, these are the measures, reporting frequency, and report formats appropriate for the level of the organization. The measures must be useful to the managers that will use them. It is recommended that the managers develop these measures (along with a team if this fits within the organizational paradigm). The measures should be modified, deleted, and/or new measures added as proves necessary to accurately measure performance. Note though that measures should not be changed too often as this may make it difficult to determine cause and effect relationships.

Step 4 involves determining how and where the performance data will be collected. This is a key step that is often overlooked. For measures to work, we must be able to gather the data. This in itself can be a significant task, and new approaches to collect data may be required to ensure that the data is accurate, and is providing the raw input that is expected.

Step 5 is the specification and employment of techniques to transform data into useful information. This information will be used to provide data in step three. Again, this step has system design implications that must be considered. Data gathered through step 4 must be converted into the information formats defined in step 3. This entails the definition of techniques to be employed to transform the data into information that can be used to control and improve the organization.

\(^a\) The supplier could be another department within the same organization. It’s just important that the organization define the system in such a way that they know what is, and what is not, within their control.
Benefits and Drawbacks:
Both approaches have benefits and drawbacks. These are shown in the tables below.

Sink/Tuttle:

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>General categories of measures; does not restrict measurement to a specific framework, or set of measures</td>
<td>More difficult to define measures (and categories) since no prescriptive framework is provided</td>
</tr>
<tr>
<td>Management Systems Analysis begins with system definition; inputs/outputs and transformation process functions are explicitly identified</td>
<td>Management Systems Analysis can be time consuming, and may requires expert advice to implement</td>
</tr>
<tr>
<td>Includes a rigorous approach to help managers understand the system, and to define methods to improve and measure performance</td>
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Kaplan/Norton:

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four measurement categories are predefined so resultant measures fit into framework; may prove quicker to define measures</td>
<td>Four measurement categories are defined; these categories may not be the best for all situations and levels of the organization</td>
</tr>
<tr>
<td>Framework was originally developed to support top-level management decision making – four measurement areas provide a broad perspective on organizational performance in a single report</td>
<td>Top-level management decision support measures may not be best suited to support lower-level decision makers</td>
</tr>
<tr>
<td>Simple approach to map strategy to measures based on four measurement areas</td>
<td>Primarily a measurement system – does not include a system analysis function as a prerequisite to measurement definition. As such, decision makers may not fully understand the business and the business environment prior to defining measures of performance</td>
</tr>
<tr>
<td></td>
<td>Does not perform well as a method to support planning, setting targets, and aligning initiatives</td>
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</table>
Conclusions:

The Balanced Scorecard and the Performance Improvement Process are not mutually exclusive. Rather, the two should be viewed as complimentary. One defines a framework to measure performance using four perspective areas, while the other defines a comprehensive process to continuously improve performance.

Organizations should attempt to deploy multi-criteria performance measures at all levels of the organization. The measurement approach must be specific to the organization. Because of this, it is suggested that the organization perform a system analysis prior to implementing any measurement system. Further, organizations should not be restricted to using only one measurement system across the entire organization, but rather, should define measures and use frameworks of measures that fit the unit to be measured. For example, an organization may choose to apply the Balanced Scorecard at the highest levels because performance could easily be communicated outside the business since the framework has gained wide acceptance. At the same time, the same organization may choose to employ other measures at different levels because they determine that these measures more accurately represent the system to be controlled and improved.

In summary, an organization must apply the right tools and methods to: (1) understand the business environment, (2) understand the organization, and (3) develop performance measures to control and improve organizational performance. The organization should not adopt a “one approach fits all” strategy, but rather, should use the system and approach that appears to work best for them. Finally, the organization cannot simply define performance measures and hope to succeed. They must first understand the business, and then use measures to help improve performance.

References:


