

Management Metrics

Metrics for Management, Managers, Management Systems & Internal Support

brought to you by
Jesse W. Brogan, BSIE, LL.B.
President, TMUS

The Management Upgrade Shop

Welcome to the Management Metrics presentation.

Jesse Brogan and The Management Upgrade Shop bring you the original application of management engineering to measure the efficiency and effectiveness of office area operations.

Traditional efficiency engineering applied performance measurements to the generation of productive outputs. The principles and techniques of efficiency engineering were applied; and it effectively doubled the performance potential of workers and work groups.

Management engineering is a new application. The principles and techniques of efficiency engineering are applied to office-based performances. This opens great potential for performance increases from internal support groups, management systems, and managers.

This presentation addresses one of the foundations of management, the measurement of performance for the work of management and internal support.

Introductions

Jesse Brogan: BSIE, LLB,
President of TMUS

Management Engineering:
A study of organizational Efficiency

Management Metrics:
The Work of Management
and Internal Support

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Mr. Brogan is the one who originally saw the need for expanding efficiency engineering. He entered into the study to define and address efficiency in management. Management Engineering is a long-term result of that study.

This presentation is based on his original work in management engineering. It stems from a self-assigned study that began twenty years ago, and has been developing since that time.

Efficiency begins with the crudest measurement of all, a difference between success and failure. There must be a difference before it is possible to manage a success.

The direction taken in the development of Management Engineering is indicative. It is an expansion of the logic and approach used by Frederick Taylor and his contemporaries in the establishment of his Scientific Management Movement. The principles he founded are just applied to a new area of business endeavor. Instead of measuring productive performance, it measures internal performances that contribute to operation of a business.

The Meaning of Efficiency

- Scientific Management Movement
- Efficiency defined in early 1900's
- Originally Applied to Productive work
- Doubled performance without increasing work
- No application for managers, “us and them”

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One of the key understandings in the Scientific Management Movement was a new measure for performance, which we call efficiency. It was a measure that compared product to the man-hour cost of generating that product. Efficiency was measured in terms of man-hours per output unit or units of output per hour for a group effort.

The original scientific-management application was effectively limited to production work, to the physical efforts that converted raw materials into salable products. The basic calculation of efficiency was a count or measure of output, compared to the man-hours expended to gain the desired productive result.

The scientific manager could focus on the essentials of this metric, output generated, and man-hours expended. It was a performance metric that related well to business profits.

There was a limitation to the application, as it only addressed work groups. The theory of management then in vogue was that management was a skill for getting others to work effectively. With this attitude, managers did not appear to do work; and so the efficiency of performing management was not a reasonable metric.

Standards & Cost Accounting

- Efficiency metric designed for work groups.
- Connection to Cost Accounting.
- Performance work standards.
- Management application to workers.
- Profitability and incentive pay systems.

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Efficiency measures started out as a way to improve the value of a worker to a business, and included a recognized potential for increasing the worker's personal earnings.

The metrics developed related personal efforts to profitable results. As much of the performance improvement accomplished through efficiency applications went to work groups rather than just to workers, there were group performance standards. These became the heart for a new management tool called cost accounting. It tracked and presented what it cost to gain performance through work groups.

Management, being approached as gaining performance through workers, soon focused in another direction, with emphasis on personal performance standards for workers. A good result from this was incentive pay systems for key workers. A challenging result was loss of focus on how cost accounting determined a contribution to profitability

It is noteworthy that management did not see itself as doing productive work, and there were no consistent applications of efficiency principles to the operations of management or the work of managers.

Calculating Efficiency

Efficiency = value produced / value consumed

Management Efficiency

**What it costs to generate value
through the efforts of others**

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Efficiency is a unit-less measure relating value generated and value consumed. It is a ratio or percentage. That unit-less ratio does provide a measure of contribution to the profitability of the business.

The pure efficiency measure, the unit-less ratio, is not useful for managing the performance of work. It is therefore rarely used by those who do work management.

As a practical matter, the metrics for performance efficiency are often expressed in locally meaningful terms that address the two values in different units. A common production-efficiency metric is man-hours required to produce a unit of output. Both units, man-hours and productive outputs, are reducible to dollar equivalents in support of business performance measures, but the units applied are more meaningful in support of production operations.

The system for capturing efficiency in these terms is called cost accounting. It has focus on man-hour costs associated with accomplishing a planned result. It compares the actual cost to the planned cost (work standard) to derive a secondary efficiency metric.

Organizational Efficiency & Profits

- Value delivered to customers.
- Cost of operating the business.
- Direct application of unit-less metric.
- Efficiency and profitability.
- Metric for owners and investors.

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One influence on efficiency metrics arises out of performance through corporations. The family-owned business supported a family, and the family was in charge of operations. What the business earned, the family earned; efficiency was not a matter of great interest.

With incorporation, ownership was separated from operating authority. Investors wanted to know that their earnings were reasonable. Organizational efficiency is a viable metric, comparing the value delivered to customers to the cost of generating that value. This is a metric that measures how well the corporate business converts its income into salable products and services, and into profit.

It is also a useful metric for the senior manager in charge of a corporate business. It is a report card on the operation of the organization under his or her management.

Part of the effect of this presentation will be expanding the use of this basic metric to various operating parts within the larger organization. It can be useful for subordinate segments within an organization wherever contribution to profitability is also a reasonable measure.

Efficiency & Customer Relations

- Based on the purpose for having a corporation.
- Functional and Beneficial outputs.
- Functional customers, beneficial receivers.
- Value for Customers / All business costs.
- Example - Value of advertising.

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Management Engineering is a study of value relations. It has metrics that support the viability and profitability of a business venture. It is a study for gaining value through the efforts of others.

There is a marked difference from traditional efficiency measures in that not all business outputs are a source of value. The business only earns income where the product is sold to customers. Where the business delivers outputs to those who do not pay, there is no direct contribution to income, and no specific value generated.

Advertising is an obvious example. Advertisements are delivered to prospective customers. It costs the business to make and deliver ads, but those who receive the ads do not pay for them. Advertising is a cost of doing business rather than a performance in its own right.

A functional customer is someone who buys a business product, or who returns value to the business in other ways because of how they value what they have received. The organizational efficiency metric compares value-delivered-to-functional-customers to the whole-cost-of-operating-the-business, which includes advertising, management, and other efforts that do not directly generate income.

Effectiveness is not Efficiency

- The need for a non-efficiency metric.
- Effectiveness and purpose to exist.
- Effectiveness has no cost component.
- Effectiveness differs from efficiency.
- Effectiveness and contribution to Efficiency.

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Beneficial outputs and indirect contributions to organizational efficiency indicate the need for a different type of metric. Effectiveness is a reasonable metric. It is fulfilling the purpose for which an effort exists.

Consider the Federal Department of State. It has a purpose to exist, but produces no salable value for those who continue its existence. It receives funding support because it is effective for the purpose that is behind its existence.

Effectiveness is a go/no-go metric addressing the fulfillment of a purpose. If an organization is effective for its founding purpose, then it is likely to be continued by those who recognize value in that purpose.

That founding purpose is often profit, earning an income from an investment. The profit-purpose organization that earns a profit will be effective. Profitable operation is a common reason for declaring performance to be effective.

Productivity is not Efficiency

- Popularity of productivity metrics.
- Assume cost stasis, measure outputs.
- Relative metric, increase or decrease.
- Effectiveness assumed.
- Efficiency not a consideration.
- Little need for professional assistance.

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Productivity has become a common metric, primarily because it is so easy to measure. It also has the general logic that appeals to managers. It is a relative measure that accepts a static resource consumption for an effort, and measures changes to the quality and quantity of outputs generated.

The obvious challenge for professional efficiency use is that this metric is measured by outputs alone. It does not compare inputs and outputs to establish profitability. It does not measure how effectively an effort contributes to the purpose for the organization. It is not a tool for professional efficiency application.

What it does have is simplicity. It is an easy metric to derive. By using this metric, the manager can avoid any need for high-end technical or professional support.

The deeper challenge is in the effectiveness of the metric. Where the output being measured is a product delivered to functional customers, productivity is effective for indicating efficiency of operation and profitability of the organization. Where that metric addresses a beneficial output, it is misleading. Increasing productivity can even reduce organizational efficiency.

Historical Applications

- 80+ years of application history.
- Experience and lessons learned.
- Original application doubled output.
- Applied to management over work.
- Group and individual metrics.
- Codified within cost accounting.

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Worker output doubled when the 19th century boss was replaced by a 20th foreman. The difference was in having the foreman support the performance process rather than simply demanding it. With defined performances, work could be measured for efficient process, and compared to established performance metrics. Performance metrics are effective.

Before the Scientific Management Movement, the work manager was someone who set responsibility upon workers, and received their performance. Afterward, the foreman accepted responsibility for assuring performance; and determined in detail what workers were to do and how they were to do it. The foreman became part of the performance process.

The boss represented the owners to the workers, and was not subject to regular performance metrics. The foreman was part of a group performance, and could have his or her hours included as indirect hours in the cost of gaining performance through the group effort. The efficiency metric was indirectly applied to work management, but was not made effective for measuring management or planning management improvement.

Historical Productivity

- No early focus on productivity.
- Efficiency is a preferred metric.
- Cost and value were readily available.
- Efficiency strongest in mid century.
- Training others in efficiency principles.
- Non-professionals & rise of productivity.
- Applications in the office environment.

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Productivity is not encountered as a major metric until the last few decades of the 1900's. The earlier metric of choice was efficiency. This is the stronger metric for relating business operations to profit generation.

The two forces that promoted productivity metrics were wider training in efficiency techniques, and discovery of inefficiency in management and internal support. The efficiency professional was being abandoned in favor of lower-skilled personnel, at the same time that there was a need for new applications.

Productivity offered an immediately available way to address performances in the office environment. It was accordingly embraced as the metric of choice for most modern management-improvement efforts.

I note that productivity measures are being applied in areas where there are no regular products delivered to customers to earn income. This metric is being used inappropriately.

Efficiency and Effectiveness

- Preferred Metrics are value-based.
- Business value is keyed to purpose.
- Specific value is a local determinant.
- Value is in the eye of the receiver.
- Different metrics for different purposes.

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Efficiency for a productive group effort was very simply defined by the productive purpose. The value of operation was in a conversion of group-inputs into defined group-outputs, a universal definition.

The CEO of a business values a personnel department that supports a smooth-running business. The senior production manager values a personnel that assures pay and providing a competent work force. The foreman sees value in personnel support for his productive efforts. Different people often recognize different sources of value.

Each of these will have different metrics; each consider appropriate metrics to be in terms of their local concept of value divided by the cost incurred. For management and internal support, there is no one metric that can serve the many purposes of those in authority. We need an expanded understanding of the meaning of efficiency.

Local Vs Organizational

**Organizational Metrics are:
Profit/Accomplishment Driven.**

**Value - Local Contribution
to Organizational Performance.**

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For management engineering, the overriding metric is organizational. Here, the purpose for their being an organization is the purpose to be served. Metrics will address an accomplishment that is achieved through management and internal support activities.

For the non-profit organization, it will be accomplishment of a non-profit purpose. Profitable businesses are in place to earn more income than they need to continue operations, and that becomes the purpose. Efficiency and effectiveness metrics support these purposes.

Internal efforts, especially in management and internal support, are not so well defined. These internal groups do not produce valuable products that are easily measured. They rather contribute to the processes that others use to generate organizational products.

The appropriate metric for these functions is a measurement of their contribution to organizational performance.

Profitability and Internal Efficiency

- Efficiency of the whole is less than its parts.
- Popular application in modern businesses.
- Improving internal products and values.
- Improving local management efficiency.
- Improving local internal support efficiency.
- Internalizing suboptimization .

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The attitude of modern management is best encapsulated in the term "management improvement." Productive performance has already been subjected to efficiency engineering. Modern efforts address the rest of business in an attempt to make every part of the business efficient. Management and internal support efficiency is approached as increasing the quality of internal products.

The result has been a loss in organizational efficiency. The purpose for management and internal support is to gain through the efforts of productive areas. The value of internal products is fixed by production-area needs for support. Increasing the quantity or quality of internal support beyond that needed adds no value. Common management improvement efforts often lack any value earned, but do incur real costs.

This is suboptimization, the making of parts of an effort locally efficient without regard for impact on organizational operations. The basic understanding of making each part efficient is a well-documented source of inefficiency.

Expanding Performance Metrics

- Organization basis for organizational metrics.
- Efficiency = product delivered / whole cost.
- Internal effort contribution to product delivered.
- Internal effort contribution to cost incurred.
- Efficiency impact as a metric.

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The need is for a metric that measures the impact on organizational efficiency. Organizational efficiency is the one universally accepted metric as it ties performance to the organizational purpose.

The potent new technique is applied investment logic. The new technique involves an efficiency challenge to each "improvement" before it is implemented.

Most changes involve some level of cost and benefit, and benefit may or may not be economic. Investment is evaluated by examining expectations of the cost and benefit prior to making a proposed change.

The metric is an impact on the efficiency of organizational operation. Comparing expected costs and benefits derives a working metric to justify the change. The metric for managing the change is a second comparison, measuring actual efficiency result against expectations.

Tool: Blackbox Efficiency



$$\text{Efficiency} = \text{value of outputs} / \text{cost of operation}$$

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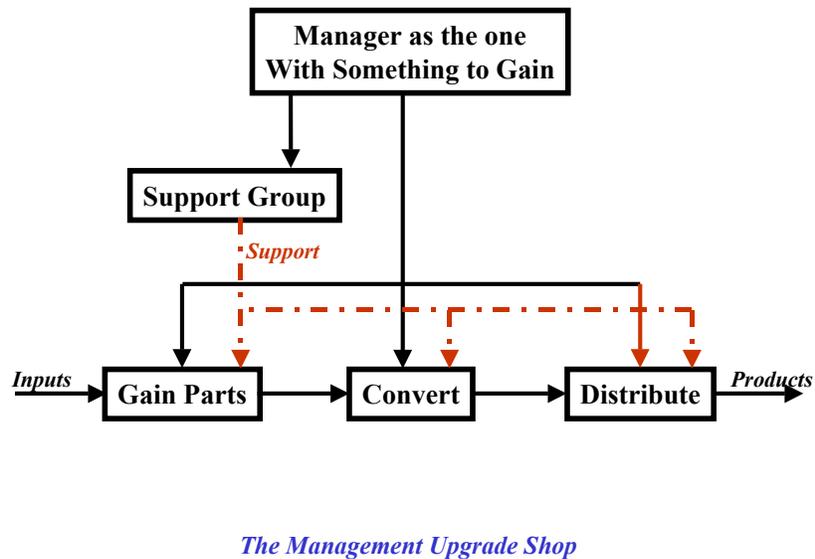
The blackbox is a special management engineering tool that is effective in dealing with efficiency. It supports visualizing functional relationships, while minimizing focus on processes. It works especially well for efficiency as it shows inputs and outputs, the two critical elements that measure efficiency.

The blackbox performs the conversion of its inputs into its outputs. In an equally valuable viewpoint, it indicates that an efficiency measure is always associated with a conversion process. The conversion defines the function of the blackbox; and any process that converts inputs into outputs can be modeled as a blackbox.

An assembly worker blackbox assembles items as its conversion process. A production group has its unique and valued outputs. The organization has its products that are delivered to functional customers.

Every production blackbox generates real value. The count of converted-units-delivered is a reasonable measure for contribution of value to organizational profitability.

Tool: Blackbox Analysis

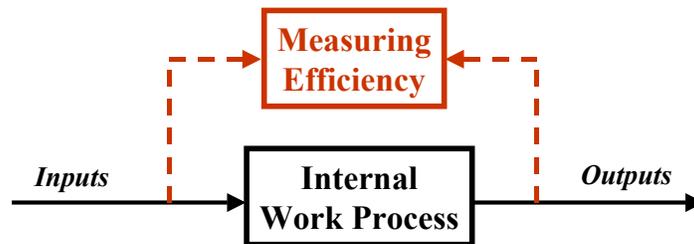


Blackbox analysis is an extension of the basic concept of the engineering blackbox. The analysis opens the blackbox to see what is inside, viewing its parts as internal blackboxes. It is a way to look at the functional parts of a larger functional entity. This tool breaks the larger conversion processes into internal blackbox efforts, each with their own local conversion process.

When we open the general business blackbox, we find some consistent structures. It has a production area that handles product inputs and converts these into the final product that the business distributes to its customers. This defines line performance groups.

Internal structure also has someone in charge, a senior manager. This is someone who is responsible to gain performance through the blackbox operation. A third area is the management system, an area that provides operational controls to the production area, and supports the senior manager function.

Work Group Metrics



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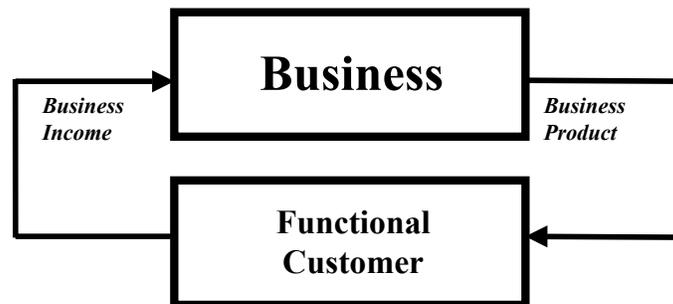
Output-based metrics for the work group are obvious. The group function is a conversion of group inputs into group outputs, and the metrics use these same quantity and quality measures.

The efficiency of the group is measured by the value it produces for those outside the group, divided by the value it receives and converts into its outputs. If we subtract these two measures, we get a rough understanding of the group's contribution to business profit.

Effectiveness is a simpler measure, and is based on value realized by those who receive group outputs. It is not indicated by the local group's input and output measures. If receivers' needs are met, the operation is effective.

Productivity is measured by the group outputs. The amount and quality of output produced measures how productive the group is. Productivity is more meaningful when comparing outputs before and after some process change.

Tool: Pairing Principle



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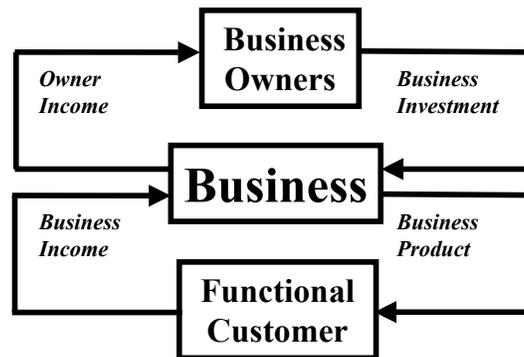
A functional customer is one who receives a functional product, and returns value for what they receive. A functional product is what a functional customer receives, and indicates value by giving resources to the one who provides it.

The pairing principle is a paired definition for products and customers. When dealing with a business, products and customers are usually obvious; but this is not the case when addressing internal management and office operations.

A support-group product has value determined by those who receive the output. The internal customer who has a need determines whether a product has value by using that output in its productive processes.

A functional customer is identified by what they return to the business because they have received value. Where there is a purchase, the payment determines the paired customer and product. For internal applications, the business resources an internal group effort because of the recognized value received by management through the internal operation.

Organizational Blackbox



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The application of the pairing principle comes with great potency. As indicated, the business is a customer of owners and investors. The investor's products are investments. The value produced is return on investments. Efficiency is measured by how much is returned relative to the amount of investment made. Effectiveness is realized when the efficiency meets minimum acceptable expectations.

The business also has its customers. They are recognized as functional customers when they receive goods or services from the business and pay for that receipt. Whatever they receive as value is the functional product of the business, with value indicated by what they pay. The whole cost of operating the business is the appropriate cost metric.

The product and payment is a cycle. Like any complete cycle, it can be reversed. Functional business customers produce business income in order to get valued products. In a similar logic, the business uses investors to produce investment dollars as their products, and they receive return on investment as their payment.

Organizational Metrics

- Values determined by Functional Customers.
- Identify Customers by what they pay.
- Productive Organizations generate Outputs.
- Effective Organizations fill Customer Needs.
- Efficient Organizations generate profits.

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With the cost and relative value of operation, we are prepared to examine specific metrics.

The organizational efficiency metric compares the value of product delivered (income earned from functional customers) to the whole cost of operating the organization. This is a measure of how effective the business is at converting its operating inputs into profit-earning outputs.

As another efficiency metric, the comparison of the return on investment to the amount invested gives an organizational efficiency metric appropriate for investors.

In an almost startling twist, the business can also address the investor as a customer. It delivers that customer a return on investments as a product, and receives new investments because the investor values that return on investment. There are potential metrics addressing how the business gains investments.

The Management System

Group Manager	Maintain vision and internal priorities. Set product responsibilities.
Management System	Ministerial Management Support. Operate the management. Support for Performance.
Performance Workers	Convert group inputs into outputs. Generate distributable group value.

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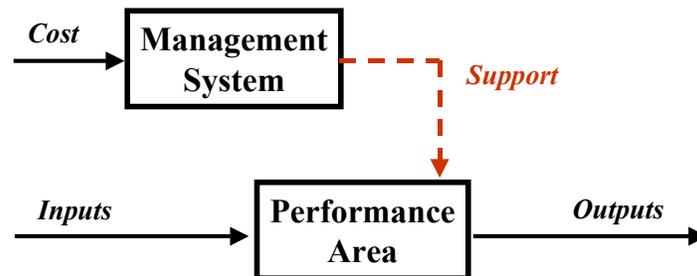
Before advancing to the heart of the subject, we need a clearer definition of a management system. The management system is everything in the organization except the senior management and the performance area. As a functional definition, the management system is how the senior manager gains performance through those who work in the production area.

The group manager has something to accomplish through the group. If he is unwilling or unable to directly manage performance, he can mission a management system to oversee the performance or to maintain its resources and processes.

The productive purpose is set by group manager assignment to working elements. The management system is part of the effort that supports the generation of group products. It can be missioned to provide inputs to subordinate group processes.

A third function follows from a general need. The management system can be self-managing as to its day-to-day operations. It is not to be a burden upon the senior manager, requiring personal group-manager efforts to keep it going.

Management System Metrics



Real Cost, but only Contribution to Value

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A management system has a purpose, which is defined as supporting both group management above and group performance below. The purpose is not found in products that the system produces, but in meeting the support needs of others. The appropriate metric is effectiveness rather than efficiency.

Once the needs of receivers are met, the value is fully provided. Additional product quality or quantity is unlikely to yield any increase in what the business can earn, though it is likely to incur additional cost. Much of what we do now as management improvement lowers organizational efficiency.

An internal support system is a cost of doing business through an organization. Typically, efficiency is maximized whenever the cost of providing adequate performance is minimized.

Management Metrics

Management purpose is gaining through others.

Management effectiveness = Subordinate group effectiveness

Management efficiency = Subordinate group efficiency

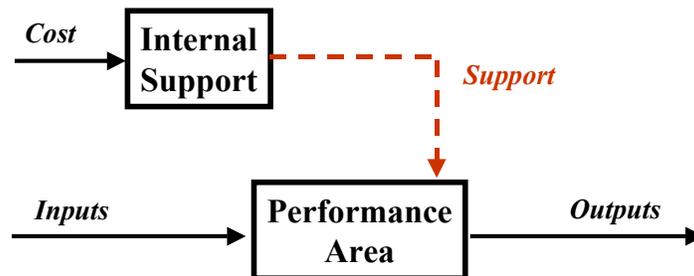
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The first concept is that management is to accomplish something through subordinates. The efficient manager is in charge of an efficient subordinate organization. The metrics of the group are the metrics of the manager who heads the group.

Another metric is from the definition, how much it costs to gain a performance through subordinates. The effective management is management hours compared to performance hours. This is a measure of how much it costs the organization to gain group performance through group management.

For this metric, the management system can be considered as the management being measured, giving the efficiency metric for the management system in hours to support a production hour. This is how much it costs the group manager to gain performance through a subordinate management system.

Support Group Metrics



Real Cost, but only Contribution to Value

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The application of measurements to the performance of internal support returns to the basic purpose for their being a support function. The performance is something that would have to be accomplished in supported groups if it were not for the external support. There is an investment in a business structure that will shift the work from those doing production to those dedicated to internal support.

The theory is that consolidating support will allow the work to be done more efficiently and effectively, so that the organization-level performance will be improved. It is a theory that sometimes proves true, and at other times fails.

Local metrics are possible, but usually do not relate to organizational performance. Investment logic is available to go beyond local measurements, depending on expectations for impacts on organization-level metrics. When the expectation of costs is less than the expectation of benefits, there is an economic justification for making the investment in consolidated support.

The Program Metric

The Cost Challenge

The Product Challenge

Creating a place to start

**Managing to fulfill expectations
Also defines exception situations.**

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It is always best to have a sense of organizational value to be gained before initiating any program. If this is lacking, it is very difficult to establish any meaningful metrics against which to measure program performance.

It is often best to start over, and establish metrics as part of a reassignment. Investment is the tool for establishing organizational contributions. If the program is not effectively assigned based on values, then it should be reassigned in a process that establishes the value to gain.

This provides the foundation for effective management over the program. The assignment will have a measure of success determined by the productive result that the Assignee is to accomplish.

The program purpose should not be production, as that should be assigned to line managers. The program purpose should not be ongoing internal support, as that should be accomplished by internal support groups. The program approach should be limited to other performance requirements.

Organizational Imperatives

- **The organization has a purpose to fulfill.**
- **Purpose is based on organizational outputs.**
- **Value is only determined by delivered products.**
- **Cost is the whole cost of operation.**
- **Management is an organization cost.**

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A fundamental of measurement is that organizational measures have only two meaningful metrics, the value of products generated for outsiders and the cost of operating the organization. These two are sufficient to address profitability, efficiency, productivity and effectiveness.

A second fundamental is that management is a cost of gaining through the efforts of an organization. It does not directly produce any measurable value, but rather has substantial impact on the value that can be produced by those who are managed. Organizational metrics will indicate the highest profit and efficiency when the costs of providing adequate management are minimized.

The same is true for programs and projects that are not firmly connected to organizational values. Performance is generally enhanced by either establishing their value purpose and reassigning it, or by minimizing program expenditures.

Personal Management Metrics

- **Our metrics history is with productive efforts.**
- **Management & Support are also work efforts.**
- **Misdirection by weak management approach.**
- **Purpose – earning pay through performance.**
- **Effective – earns pay through performance.**

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Managers are not the only ones who have to perform work. Internal support workers are hired into a business to perform functions that minimize the cost of doing work through an organization.

Measuring managers as the responsible leaders of a group effort makes sense. Measuring managers as those who perform management in support of performance makes sense.

There is no clear metric for performance of management, as it has different values when observed from different perspectives. A more sensible approach is to look to the employment contract for a definition of what managers should accomplish. If there is a general performance in compliance with this contract, the contract is completed as to the performance periods covered. This is a practical measure.

Challenges arise in management teams, as where a manager and secretary work as a performance unit. There is only one performance, but two performers. The intelligent approach is to attach the measure to the working manager in charge, and treat the subordinate team members as part of that manager's effort.

Engineered Efficiency Metrics

- **Earn pay by gaining through efforts of others.**
- **Earn pay by providing support.**
- **Earn pay by operating the management system.**
- **Cost is pay, value is determined by purpose.**
- **Engineered metrics use internal investment.**

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There is a long-term effort to measure the efficiency of management efforts by reference to management characteristics. For example, a manager might be judged for quality based on his leadership ability, or his ability to perform public speaking.

These are known to have value, and to give value measures. The problem faced is that the value is local only, and has no good relationship with organizational metrics. There is no logical way to get from being a potent leader to being valuable to the business in its function of generating profits. The quality of leadership will have different impacts depending on local circumstances. Potent leadership in a support area is likely to lead to over-emphasizing the value of that support, interfering with effective priorities upon organizational products.

The defining question is “why to measure.” If the measure is value to the business, then go to fulfillment of the employment contract. Most measurements by personal characteristics or skills really have little meaning to anyone but the one initiating the measures.

Conclusions

- **Management is work that managers perform.**
- **We have metrics for work performance.**
- **Measurement by characteristics fails.**
- **Internal support is effective, not efficient.**
- **Management Improvement is a cost.**

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We can measure management and internal support, but only where we look at these as types of work. Management is effective when subordinate efforts generate desired output products. Internal support is effective when supported group efforts are not hampered by any failure in support provided.

Efficiency in these areas is another issue, as there is no organization-level value in management or internal support products. Our efforts to make management efficient were doomed from the beginning. Management is an internal support effort, and making it locally more efficient does not yield efficiency improvements at the organization level. We continue to make investments that do not yield business-level results.

The engineered approach to operating metrics is an effective alternative, one that is designed to support organizational efficiency.