

RESULTS IN GOVERNMENT WITH PERFORMANCE MEASUREMENT

Laura R. Wipper
Oregon Department of Transportation

ABSTRACT

A pilot project was developed in July 1989 to implement Performance Measurement (PM) at the Oregon Department of Transportation (ODOT). This program quantifies measures of efficiency and effectiveness for management teams and work teams, and the Department as a whole, and equates this data on a common scale. PM represents a change in philosophy. Rather than monitoring individual activities, the program focuses on results. Key factors in the accomplishment of results are tracked and the outcomes are communicated on a regular basis. Efficiency measures gauge the volume of production and the cost while effectiveness measures track quality and customer satisfaction. This new focus has seen increasing success as the 27 ODOT Highway Division work crews (7 percent of the total work force) participating in the pilot steadily improved productivity, culminating in savings of more than \$3.5 million. The success of the pilot has led to not only full implementation of the program at ODOT, but caught the eye of Oregon's Department of Administrative Services who mandated the program for all state agencies. PM has become a requirement for federal agencies with President Clinton signing legislation in 1993.

HISTORY

State government in Oregon has evolved over the past century by adding commissions, boards, agencies and, in turn, program upon program for what seemed important reasons at the time. Those reasons can become lost over time, needs disappear, and yet activities and costs of programs often remain. Without a mechanism for ongoing evaluation, this can build inefficiencies along with a lack of effectiveness and accountability due to the absence of a clear mission, purpose and focus.

The Oregon Department of Transportation (ODOT) had no readily visible signs of this malaise, yet in reality, did suffer from some of these symptoms. In 1988, the new State Highway Engineer, Don Forbes, asked questions that did not always have answers at the time. He asked such things as: how much does it cost to maintain the average lane mile; how accurate are

construction contract estimates; does the transportation planning process lead to accomplishment of Department goals; and what is the public's perception of the Department? The search began for a method to provide answers to these questions, and more, and to quantify the efficiency and effectiveness of the ODOT.

The method for answers was found in a program developed at the Oregon State University Productivity Center by James L. Riggs and Glenn Felix. The program, called Performance Measurement (PM), establishes measures of efficiency (cost or volume of output) versus effectiveness (quality of output and customer satisfaction). The purpose is to improve performance by providing a tool to quantify and express results. It also provides data on which to base decisions to optimize efficiency and effectiveness.

With the strong support of Don Forbes, now the ODOT Director, PM is currently in full use throughout ODOT. To date, measures exist throughout the organization, for all branches and for all major operations. In the program areas of transportation project development, construction and maintenance, measures exist at all team levels (top-level, mid-level and front-line). For support functions, measures exist at all top-levels, most mid-levels and some front-line. An internally developed performance measurement information system is in place to generate reports for upper level teams. Work is currently underway to expand system availability to all teams in ODOT.

WHY MEASURE PERFORMANCE?

A well-managed organization, be it public or private, needs to have clear purpose, goals and objectives, base decisions upon data, provide regular feedback and have some form of recognition for above-the-norm performance. The general state of our nation's economy suggests that many U.S. companies do not enjoy this type of management even under the powerful motivation of profits. Government agencies, too, suffer a similar lack. Initiatives for a tax overhaul suggest the public have lost confidence in government to operate efficiently and effectively. Over the decades, as layers of programs build up, a governmental organization can lose its focus without a regular, data-driven evaluative process in

place. PM provides that evaluative process for the ODOT.

PM clarifies the overall mission of ODOT and the purpose of its branches, sections and units. It provides direction by presenting data against a backdrop of historical averages and historical bests or goals. Presented in a matrix, seemingly disparate information can be converted to a common scale allowing evaluation of the interaction between efficiency and effectiveness. This enables managers and staff alike to base decisions upon data and to evaluate strategies for improvements to achieve the optimum balance between improved efficiency and effectiveness. This feedback is provided on a regular basis to help managers manage better at the program level and to show to those involved what is going well and what needs more attention. Because the focus is on programs and work teams, not individuals, teamwork is improved at all staff levels. The simple act of performance measurement alone usually prompts improvements since what is measured is what will surely get done.

KEY ELEMENTS OF PERFORMANCE MEASUREMENT

Results Versus Activities

Results are the points at which products or services are delivered; activities are the actions that lead to delivery of products or services. In the past, most forms of measurement at ODOT placed greater emphasis on forecasting and tracking activities - work load measurement. ODOT now places emphasis on results. Activity-based measurement reinforces the accomplishment of only activities; results-based measurement reinforces the accomplishment of results.

Group-Based Versus Individual Measures

A key part of the process to develop performance measures is the involvement of the work team. Work teams are taught the notion of PM and then facilitated in development of measures for their unit. Often, the individual members of the teams have had minimal awareness of all functions of the team so the discussion fosters a better awareness of the work team's priorities. Managers have reported improved work team cohesiveness following such discussion. Measuring the performance of individuals can be divisive whereas measuring group-based results causes the members of

the group to work better together to produce better results.

Performance Versus Work Load Measures

Where work load measures capture just the number of activities, performance measures gauge results. When only activities are counted, desired results may not be produced because the focus is limited to the activities. This limited focus does not provide an environment to culture improvement strategies where measurement of results does provide such an environment. As improvement strategies surface, they can be evaluated via the performance matrix.

Work Group Versus Individual Developed Measures

The process of implementing PM begins with a management team that develops an appropriate set of measures for that level in the organization. Then work teams within that part of the organization develop performance measures based upon their intimate knowledge of what they do and what they believe to be important. This ensures more accurate measures because no one knows more about what is being done than the people who are doing the work. A review process enables work team members at various organizational levels to understand what is being measured and why it is important. This becomes two-way communication allowing important ideas to roll "up" and "down" through the organization.

Efficiency and Effectiveness Versus Amount Done Measures

PM looks at both efficiency and effectiveness. Efficiency means doing the right things with the best use of resources. Effectiveness means doing the right things well and customer satisfaction with the product and/or service.

This program tailors measurement of quality to the product, service and customer because quality holds different meanings for different people. For example, timeliness, accuracy and availability of services equal quality for the driver and vehicle licensing functions of ODOT. Pavement condition and bridge sufficiency ratings are measures of effectiveness for not only highway maintenance, construction and design, but also the department as a whole. Bridge design teams

measure efficiency in their design cost by square foot balanced by their effectiveness in terms of construction cost per square foot along with other success criteria. This ensures efficiency in one program area does not come at a negative cost for another program area.

Credibility in State Government Versus Distrust of the Unknown

ODOT's goals, and those of other government agencies, and information about how well they are being achieved can be conveyed to the public via PM. State government budgets will now be based upon program performance and more effectively presented to the legislature because program cost (efficiency) and effectiveness must be demonstrated. This can also create a new role for government that has not habitually played a proactive role in communicating exactly what it is trying to accomplish, the real cost of the accomplishment and the quality of the accomplishment.

The Visual Element

The performance matrix, a complex-appearing document, is actually how PM keeps things simple. Once understood, the performance matrix will show at a glance if an entire organization's performance in key areas is improving or declining.

THE PERFORMANCE MATRIX

The matrix is not as complex as it initially appears. In fact, it can be understood in less than 30 minutes.

In the sample matrix in Figure 1:

- Row A identifies *Emphasis Areas* of efficiency and effectiveness. Efficiency measures monitor production volume and cost. Effectiveness measures record the quality of products and/or services such as timeliness, accuracy and conformance to standards. A mandatory effectiveness measure is customer satisfaction which is the customers' perception of products and services provided. Safety and work life quality are two more areas that could and should be included.

- Row B identifies more specific *Key Measures* of performance important to the organization in each emphasis area. In the first column of Figure 1, the key measure is Transactions Per FTE (Full-Time Equivalency).

- Row C contains the *Actual Results* achieved over the reporting period for each measure. In this sample

matrix, the actual average Transactions Per FTE was 130.

- Row D shows the *Potential* results targeted to be achieved; in other words, a goal for each measure. Potential is based upon either a historical best or an absolute goal such as 100% customer satisfaction or zero errors. The "10" is the level achieved when the goal is reached. In the example, the potential for Transactions Per FTE is 200.

- Row E lists *Baseline* results or average, standard or regularly expected performance based upon historical averages. The "0" is the level achieved when average results are achieved. In this illustration, baseline for Transactions Per FTE is 100. Because neither exactly average nor potential results are always achieved, a range of performance is also identified. Since performance, when measured, is more likely to be above average than below, ODOT's format contains ten levels above the baseline and only five below. The range between each level is determined by dividing the difference between baseline data and potential by ten. For Transactions Per FTE, 200 (potential) minus 100 (baseline) divided by 10 equals a range of 10 per level. This range is taken in the opposite direction for the negative levels.

- Row F is where the *Level Achieved* based upon the actual results is shown. These levels are the common scale that can compare the interrelationships between measures that would otherwise be incomparable. The level achieved is reflected here because it is multiplied by the relative weight shown in Row G.

- *Relative Weight* in Row G is a method of weighting or ranking the key performance measures. By convention, all the relative weights in a matrix total 100. The assignment of relative weights is determined by the work groups once their measures have been developed. This process is somewhat arbitrary, but the measure of greatest importance is the measure with the greatest relative weight. Conversely, the measure with the lowest relative weight is the measure of lowest importance. In Figure 1, the labor efficiency measure, Transactions per FTE, has the greatest weight so it is of highest importance. The measure with the least weight and of lowest importance is a work force measure, Safety.

- Row H shows the *Earned Value* of each measure which is the result of multiplying the level achieved in each measure by its relative weight. For example, level three was achieved in the Transactions Per FTE measure in Figure 1 which has a relative weight of 25 thus providing an earned value of 75.

- The *Performance Index* at the bottom of the matrix is the sum of the earned values for all measures contained in the matrix. This one number shows overall

A	Emphasis Areas	EFFICIENCY		EFFECTIVENESS					
		LABOR	COST	QUALITY		PERCEPTION	WORK FORCE		
B	Key Measures of Performance	Transactions	Cost	Percent	Percent	Percent	Work Life		
		Per FTE	Per Transaction	Delivered On Time	Of Work Corrected	Satisfied Customers	Quality Index	Safety	
C	Actual Results	130	\$2.30	90%	12%	80%	-10	0.11	
D	Potential	10	200	\$1.70	100%	0%	100%	100	0
		9	190	\$1.75	98%	1%	98%	90	0.01
		8	180	\$1.80	96%	2%	96%	80	0.02
		7	170	\$1.85	94%	3%	94%	70	0.03
		6	160	\$1.90	92%	4%	92%	60	0.04
		5	150	\$1.95	90%	5%	90%	50	0.05
		4	140	\$2.00	88%	6%	88%	40	0.06
		3	130	\$2.05	86%	7%	86%	30	0.07
		2	120	\$2.10	84%	8%	84%	20	0.08
		1	110	\$2.15	82%	9%	82%	10	0.09
E	Baseline	0	100	\$2.20	80%	10%	80%	0	0.1
		-1	90	\$2.25	78%	11%	78%	-10	0.11
		-2	80	\$2.30	76%	12%	76%	-20	0.12
		-3	70	\$2.35	74%	13%	74%	-30	0.13
		-4	60	\$2.40	72%	14%	72%	-40	0.14
		-5	50	\$2.45	70%	15%	70%	-50	0.15
F	Level Achieved	3	-2	5	-2	0	-1	-1	
G	Relative Weight	25	15	15	10	20	10	5	
H	Earned Value	75	-30	75	-20	0	-10	-5	

Performance Index: 85

FIGURE 1 Performance matrix.

how well an organization or work group satisfied their priorities. A total of zero means that the performance overall was average. A positive number means some degree of overall above average performance. A negative number means some degree of overall below average work. Because the relative weights must total 100, achieving the maximum or goal potential in all measures would equal a performance index of 1000; achieving level -5 in all measures would equal a performance index of -500, thus giving some relativity to the positive or negative degree of overall performance. A performance index of 85 in the sample matrix indicates slightly above average effort.

Various levels of achievement attained in each of the key measures contribute to an overall indicator. These measures can be evaluated individually to determine if performance was below average in any specific area. When performance is below average in more than one area, the relative weights and the earned values can be examined to focus improvement strategies. In Figure 1, equal negative levels were achieved in two measures, Cost per Transaction and Percent of Work Corrected. Cost per Transaction would be the area of highest priority to improve due to its higher relative weight and greater negative earned value.

Analysis of the matrix in Figure 1 reveals a work force working at a high production rate to deliver increased products/services with a greater percentage on-time. The negative side is a tired staff making more errors and working less safe. Increased timeliness counterbalanced by decreased accuracy could account for average customer satisfaction. One improvement strategy could be to reduce production and timeliness just enough to increase accuracy. Another strategy might be to add staff that could reduce production per FTE, but could increase accuracy, timeliness and customer satisfaction. A third strategy could be to evaluate processes to increase production, timeliness, accuracy, etc. The matrix would show which strategy produced optimum results.

THE PROCESS OF IMPLEMENTATION

Implementation begins with a steering committee consisting of *all* senior managers ideally or, at a minimum, the agency head, the budget officer, information services manager, personnel manager and a performance coordinator. This group is taught the concept of PM before going on to develop guidelines and performance measures that are very broad in scope.

The mid-level management team participates in the same workshops as PM progresses to the next level in the agency. This group develops measures that are still broad in scope, yet specific to that level in the agency while conforming to the guidelines and measures developed by the steering committee.

The measures continue to get more specific as work teams learn about PM. Through workshops, they go on to develop their measures within the steering committee's guidelines.

At each level, the team decides what is important to measure within agency guidelines. This hierarchal approach allows data from all over the agency to feed into agency-level performance measures. For example, one Motor Vehicles Division quality measure tracks timeliness. This is a measure of the percentage of transactions meeting service levels in twelve different service areas. The work teams then develop a measure to track the timeliness of the specific service offered by the team.

RESULTS OF PERFORMANCE MEASUREMENT

The initial pilot of PM aligned measures with financial incentives. This pilot involved 27 work teams which amounted to 7 percent of the total department work

force. At the end of the two-year pilot period, savings/cost avoidance through improved efficiency by the teams totaled more than \$3.5 million.

These teams accomplished this by working smarter and using their performance measures to evaluate new processes. One construction crew doubled the distance between labor intensive "hubs" or grade markers. They reduced the labor to install hubs by 50 percent and found through their performance measures that quality remained the same.

A transportation permit crew was anticipating twice the work load due to new requirements so they doubled their staff. They were surprised to find through their performance measures that this actually reduced their output. This crew reevaluated and redesigned their processes, reduced their staff back to the original number and found they doubled their output. Using the evaluative tool the measures provide, the permit crew found a way to handle double the work load without increasing staff.

The results orientation, the savings generated and the above examples of success are among the primary reasons ODOT proceeded with full implementation of PM. However, the pilot also revealed some potential pitfalls to avoid.

LESSONS LEARNED

During the pilot phase of PM, it was determined that the program could beneficially affect results. Beyond seeing improved performance, four key lessons were learned to carry out the program department-wide better.

- An automated reporting process must be in place before agency-wide implementation begins. Without automation, data gathering can become extremely labor intensive making it difficult to produce timely reports. Once the measures have been developed and data gathering has begun, work groups are anxious to receive regular feedback. Confidence in the program and its benefits can be lost if this part of the program is not done.

- Union representatives must be involved at every step of both a pilot and full implementation to learn the concept, the process, the reasoning behind steering committee guidelines and, above all, to realize performance measures are based upon results produced by a group and are not individually focused.

- A communication and decision making process must precede agency-wide implementation. The steering committee must decide such things as the level of the

agency responsible for review of the measures, baselines and potentials; the frequency of review; the criteria to be used to determine baselines, etc.

- All levels of management must be actively involved in the PM process and kept informed. In addition, senior management must understand, support, champion and promote the program.

ODOT has been quick to incorporate these improvements into the program to streamline implementation as it continues through the agency.

CONCLUSION

As of July 1992, 27 pilot work groups, amounting to 7 percent of the work force or 350 FTE, saved ODOT more than \$3.5 million through improved efficiency and effectiveness. In addition, if success can be measured by what others imitate, PM at ODOT can be considered a resounding success. What began as a pilot program within ODOT, has become a full scale initiative throughout state government in Oregon. The Department of Administrative Services, overseer of state government in Oregon, recognized the value of the PM program and mandated it for all state agencies. ODOT aided in the success of this initiative by teaching representatives from more than 115 state agencies the program concept and implementation. ODOT expertise helped countless agency management teams with development of performance measures.

Oregon state government introduced performance measures to budget documents and the legislature in 1992 & 1993. This was done to build a foundation for a new and consistent platform for state program budget discussions. Agencies will be required to show program efficiency and effectiveness in the coming budget and legislative cycle in 1994 & 1995. This will enable funding decisions, in a time of significant budget shortfall, to be based on data.

In August of 1993, President Clinton signed legislation requiring implementation of performance measures in the federal arena over a ten year period. Oregon and ODOT have been contacted for information and assistance by many state and federal agencies.

Oregon was awarded the "E for Effort Award" by *Financial World* magazine as a result of the magazine's annual evaluation of state government. The award is

given to honor a state that has taken a leadership role in dealing with present issues facing state government. In the annual rankings by *Financial World*, Oregon has moved from 34th in 1990 to 17th in 1991 to 6th in 1992. The state's "trailblazing work in performance measurements" was the primary reason cited by the magazine for Oregon's movement into the top 10. At last report, Oregon remains in the top ten. Because government is so new to PM, a *Financial World* speaker at a conference on this topic in 1993 used an early childhood development analogy to compare states. He said that none were walking with confidence or running, but many were learning to crawl. Only one was beyond the crawling stage to the toddler stage (walking with some unsteadiness) - that state is Oregon.

ODOT will soon begin to see all efforts in PM come to department-wide fruition. January 1995 is the anticipated completion date for all teams at all levels in the organization to have performance measures in place. Don Forbes, ODOT Director, expects branch managers to begin using performance measures to manage their branches beginning in July 1994 and will make this part of manager performance plans. Some managers have already taken this a step further. One branch manager uses performance measures as one of the short list of criteria upon which his mid-level managers are evaluated. Another mid-level manager meets monthly with his unit supervisors as a group to evaluate the latest results of their unit measures.

Here in Oregon and especially here at ODOT, we want to change the culture of government. We want to focus on results. We want to test our ability to influence things that are seemingly beyond our control. For example, something like safety on our transportation system is subject to many external influences. Yet ODOT can manage for optimum results if we look for system designs and safety programs that produce cost-effective results. We look forward to improved management of transportation programs via Performance Measurement.

REFERENCE

G. Felix, *Performance Measurement in Oregon State Government, Using the Productivity Matrix*, Special Edition for Oregon State-Government Operations, The Howard Publishing Company, Tualatin, OR, 1991.