

# Some Concepts on Performance Measurement and Governance Models

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International Workshop on Performance Evaluation  
and Management of State owned Enterprises  
(14-15, January, 2015)  
New Delhi, India

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## **Abstract**

In this presentation the notion of performance and its measurements are first described. Various measurement scales are introduced. Models are defined, their classification and evaluation are explained. Different governance models are compared and briefly analyzed. Finally performance evaluation of public universities, that are similar to the state owned enterprises, is described, with particular case of University of Nairobi, Kenya.

## **1.Introduction**

Performance may be defined as accomplishment of an assigned task which is mostly measured against preset known standards of accuracy, completeness, cost and speed. In an agreed contact, performance is deemed to be the fulfillment of an obligation, in such a way that releases the performance from all liabilities under the (signed) contact. However, for a few individuals performance is the reflection of their satisfaction due to commitment and dedication towards the assigned task to completion in the most ethical way.

Performance measurement has been acknowledged as a fundamental building block of Total Quality Management and a Total Quality Organization. In the cycle of never ending improvement, performance measurement plays an important role in the following areas:

- Identifying and tracking progress against organizational goals.
- Identifying opportunities for improvement.
- Comparing the actual performance against internal and external standards.

Reviewing the performance (both financial and non-financial) of an organization the direction of strategic activities (the vector) needs to be streamlined, so that everyone is motivated to work with the same objective to attain the best possible result. It is well understood that expenditure on

prevention and improvement activities is an investment from which handsome return is expected, which results in:

- Reduced failure costs.
- Lower appraisal costs.
- Increased market share.
- Increased customer base.
- More productive workforce (effectively motivated).
- Satisfied customers.

*Performance Measurement Framework* –There are four steps in performance measurement framework:

- Establish key goals.
- Establish metrics.
- Understand performance (with all its components).
- Initiate improvement (and keep its track).

Initially the management needs to focus on a few goals that are critical to the success of the organization or business and ensure they are SMART, that is:

- Specific.
- Measurable.
- Achievable.
- Relevant.
- Timely.

*Performance measures* quantitatively inform the individuals or organizations about the products, services and the processes that produce them. These measures make us aware about:

- How well we are doing?
- Are we meeting our goals?
- Are our customers satisfied?
- Are our processes in statistical control?
- In which segment improvement is necessary?

Performance measures in most cases can be grouped into following categories

- Effectiveness.
- Efficiency.
- Quality.

- Timeliness.
- Productivity.
- Safety.

In most cases, we measure the performance of individuals and through them of the organizations or firms. Better performing individuals enhance the overall performance of the organization.

### 1.1 Variability in Measurements

The notion of variable is first introduced and then the causes of variability in the measurement are described and finally various scales of measurement are explained.

The researcher's or manager's specification of the type of item, characteristics or event to be studied or observed is called the conceptual variable. The technique chosen for measuring particular instances or quantifying of the conceptual variable is known as its operational definition, because the measurement operations precisely and accurately define the variable. A good definition of the conceptual variable would produce measurements that are valid and reliable. A variable is a particular set of characteristic events or items such that the element of the set may be assigned different numerical values.

In measuring the performance one has to interact with human beings and in dealing with them almost all data (collected information) contain variability because of the following reasons:

- The units of study (people) are rarely identical to one another (unlike electrons, atoms or molecules, studied in Physical Sciences).
- The measurement can not be taken as accurately as one would like for the attribute or behavior one would wish to study. Therefore, we have measurement errors that contribute to variability.
- Even the single unit (a person) usually would not respond exactly the same way on two different occasions, which leads to unreliability and is a source of variability.

Due to variability, less faith can be placed on single observation (or score) than one would like. Therefore, it becomes necessary either to measure single subject several times (eg. periodic performance of individuals in the organization) or assess many different subjects or events (eg. performance of different employees in an organization to measure the overall outcome) in order to obtain data that could reasonably reflect the aspect under study.

Individual differences, measurement errors and unreliability are the major factors that hinder in drawing accurate conclusions from the results of controlled observations.

Statistics faces the variability and uncertainty of the real world directly, but statistical reasoning can produce data whose utility is not destroyed by these and allows to state how uncertain the conclusions are going to be. It is the task of statistics to quantify the variability in a set of measurements and derive precisely stated and consistent decisions about the results by acknowledging the uncertainty produced by variability.

A major function of statistics is to describe efficiently the nature of experimental results, observations on large group of objects (eg, people in an organization) and relationships between two types of measurements.

## 1.2 Scales of Measurements

Primary concern about measurement technique is that it should correctly reflect the attribute being measured. The three properties that are popularly used for classifying measurement scales are: *magnitude, equal interval and absolute zero point.*

*Ratio Scale-* It has all three properties and allows ratio statement to be made about the attribute being measured. A person is twice as tall as the child. Other examples are production cycle time, work measurement time, passenger miles, number of vehicles sold and number of employees. This is of the form  $y=ax$ .

*Interval Scale-* It possesses the properties of magnitude and equal interval, but not absolute zero. Measurement of temperature in F or C. Interval level data are always numerical. Other examples include percentage change in employment, percentage return on a stock and change in the price of share. This can be of the form  $y= a+ b x$ .

The ratio and interval data are usually gathered by precise measurements and are called metric data and are therefore also referred to as quantitative data.

*Ordinal Scale-* It only has magnitude. Ordinal level measurement can be used to rank or order items. Some research questionnaires with Likert-type scales are considered to be ordinal in level. The differences in ranking are not necessarily equal.

*Nominal Scale-* Such scales do not possess any of the three properties. These result from the classification of items into discrete (mutually exclusive) groups that do not bear any magnitude relationship to one another. The numbers representing nominal level data can be used to categorize or classify. Some of the variables that often produce nominal level data are places of birth or residence, gender, ethnicity and religion. National identification or social security numbers, post box or telephone numbers are some more examples of

nominal data. Few suitable statistical techniques are available to analyze nominal data. It needs to be understood that Chi-square statistics can be applied to nominal data to produce useful information.

The nominal and ordinal data values are often derived from imprecision measurements such as ranking of objects, which are non-metric data and are also known as qualitative data.

Statistical techniques can be divided into parametric and non-parametric. In the literal meaning, a parametric statistical test is one that makes assumptions about the parameters (defining properties-like normality) of the population distribution(s) from which the data values are drawn, while a non-parametric test is one that makes no such assumptions. Parametric statistics require that data to be ratio or interval. For the ordinal and nominal data, non-parametric statistics must be used. However, non-parametric statistics can also be used to analyze ratio and interval level data.

Managers of organizations (including state owned enterprises) should make use of suitable techniques to analyze the collected data for measuring the performance of their employees on the relevant attributes.

## 2. Models

The models are first defined along with their classification. The basic requirements and evaluation of mathematical models is then presented. Finally various governance models are described.

Models are representation or abstraction of processes, situations, actual objects or any thing one wishes to describe or whose behavior pattern one wishes to study and analyze. The model provides the basis for informed predictions. Models are classified by their types, functions, purpose, dimensionality, subject and degree of abstraction. The basic types include: *Iconic (Physical)*; *Analogue (Diagrammatic)* and *Symbolic (Mathematical)*.

Most of the applied studies require mathematical models. The mathematical models are the representation of real situations (or aspects) using algebraic variables in terms of figures, symbols, equations and inequalities. The mathematical models are further classified into:

- Standard or Custom made.
- Qualitative or Quantitative.
- Deterministic or Stochastic
- Descriptive or Optimizing.
- Static or Dynamic.
- Simulation or Non-Simulation.

Before constructing a mathematical model, following questions about the undertaken problem must be answered:

- How shall we express the solution of the problem, that is what is the objective measure of effectiveness of the problem (in terms of money or time saved, extra items produced or sold, efficiency improved) ?
- What are the aspects of the problem that can be controlled and adjusted in the problem?
- What are the aspects of the problem that are beyond our control and have to be accepted as given?
- What is the relationship between controllable and uncontrollable variables? Can this relationship be expressed mathematically?

## 2.1 Evaluation of Models

Models show direct or indirect relationship between objects or situations being studied and represent action and reaction in terms of cause and effect. The reality is very complex to be represented in a model, but it should be ensured that those aspects of reality that are under investigation have been included in the model. In case the model fails to predict what is happening (or what will happen) in the real world, the nature of failure of the model might give clue to the model's shortcoming, so that it must be revised accordingly. Then only proper evaluation of the model can be made. An important advantage of model building is that it provides a reference frame for consideration of the undertaken problem. The model construction allows one to see the effect of changes in the parameters (representing reality) without actually constructing the project and assisting in analyzing the present and future situations. Models can be utilized to train the staff and enable trainee to distinguish between controllable and uncontrollable variables as well as to determine relative importance of each variable. Expressing a problem in the mathematical form one has the advantage of using computational facilities of mathematics and various branches as well as procedures of mathematics can be used to obtain the desired solution of the undertaken problem. The behavior of the system and its sensitivity can be studied by changing the variables. Mathematical model indicates what information should be collected and in what amount. This makes it possible to deal with the problem in totality and allows a consideration of all the major variables of the problem simultaneously.

## 2.2 Governance Models

Governance can be defined as the processes, structures and organizational traditions that determine the manner in which power is exercised, stakeholders have their say, decisions are taken and decision makers are held accountable (adapted from the article “Building Effective Approaches to Governance” by Mel Gill).

Governance plays an important role in determining how many organizations function. There is not one coherent flawless model for governance, because organizations have different working environment and circumstances. Therefore, most of the governance models need to be custom made, so that specific aspects of the organization can be covered. Some of the theoretical basic governance models are as follows.

***Operational Model-*** In this model the board manages, governs and performs the work of the organization. *This model lacks the contribution of staff and stakeholders.*

***Collective Model-*** In this model the board and staff operate as a single team when making decisions about governance and the work of the organization. Board members may work with either or both service operations or management functions. *This model lacks contribution of stakeholders.*

***Management Model-*** In this model the board manages operations through functional committees that may or may not have a staff coordination. *This model lacks the participation of stakeholders.*

***Constituent Representational Model-*** In this model publicly elected officials (boards) or federations have primary responsibility of balancing the interests of their constituents as well as the best interests of the overall organization. *In this model there may be conflict of interest between the groups due to election.*

***Traditional Model-*** In this model the board governs and oversees operations through committees established along functional lines (for example, human resources, finance, programs) but delegates the management functions to the executive director. *This model lacks the participation of stakeholders.*

***Rule-based Model-*** In this model the board is focused on setting a clear direction for the organization and getting the best results for the money invested. The executive director is a non-voting member of board, carries substantial influence over policy making and direction, is viewed as a full partner with the board and has a relatively free hand at managing to achieve objectives established by the board. Committees are used for monitoring and auditing the performance of the board, executive director and organization.



Board members are selected for community representativeness and commitment to the organization's purpose and may be used for selected tasks in their area of expertise. *This model has the challenge of following the rules efficiently.*

**Policy Governance (Carver) Model** In this model the board governs through policies that establish organizational aims, governance approaches and management limitations. These policies also should define the relationship of board with the executive director. The executive director has broad freedom to determine the means that will be used to achieve organizational aims. The executive director reports to the full board. The board does not use committees but may use task teams to assist it in specific aspects of its work. *This model has strong influence of executive director that may lead to biased decisions.*

**Advisory Board Model** In this model the board selected and dominated by the executive director. This board provides prima facie legitimacy to the organization but governs only in a nominal sense. Board members are selected for profile and contacts that will lend credibility to the organization and facilitate access to funding. Essentially board members provide advice and may rubberstamp the executive director's recommended budget and plans. *This model lacks the contributions of stakeholders.*

A clear agreement between the board and executive director about their relationships and respective roles is essential for an effective and efficient governance partnership. The size of a group and its complexity and geographic scope, as well as personal or political agenda of board members are all factors that influence a board's approach to governance. However, the quality of relationship between the board members and executive director is instrumental in the success of policy implementation. This is true for public, private and state owned enterprises.

Risk management and quality committees assist in establishing clear measures of organization performance in key areas. In most of the successful governance model, the governing body will be responsible for the following aspects:

- Creating a vision.
- Securing resources.
- Defining clear roles and responsibilities for every one.
- Establishing benchmarks for performance and periodically monitoring them.
- Becoming accountable to key stakeholders.

In order to determine the most suitable governance approach for a particular organization, it requires a creative use of practical knowledge and a basic understanding of the various concepts of governance. In majority of cases the custom made models are preferred over the standard models for governance of the organizations. The mixed model (with best components of public and private sectors as well as inclusion of both static and dynamic variables) would be most suitable for the state owned enterprises.

### 3. Performance Measurement at Universities-case of University of Nairobi, Kenya.

Public universities in most of the countries are partially or fully supported financially either by state or central governments. This is done as a part of social responsibility of the government to provide affordable quality education to the public. In the changing environment public universities are competing effectively with private universities, both in quality and student registration numbers. At institutes of higher learning, the performance of teaching staff is mostly determined by the components of teaching, research, supervision and stakeholders responses. University of Nairobi uses a performance evaluation form for this purpose. The form consists of seven parts, which covers the following aspects.

*Part I-* Deals with employees personal data (with 12 points, *mostly in nominal scale*).

*Part II-* General instructions/guidelines, which provides guidelines on how to fill the form and includes:

- (a) Definition of terms.
- (b) Evaluation guidelines.
- (c) General rating guidelines (with 5 points to outstanding and 1 for below expectation, *mainly procedural*).
- (d) Rating guidelines for progress towards attainment of PhD qualification. *This can not be standardized, as it depends on discipline.*
- (e) Rating guidelines for research, conference papers and student supervision in the appraisal period. *This is also subject dependent.*

*Part III-* Departmental strategic objectives (to be completed by the supervisor). The departmental priority objectives are listed from which performance targets to be derived. *These vary from discipline to discipline and can not be measured in the same way for different departments.*

*Part IV-* Performance targets, where the areas outlined are set and agreed upon -between the appraiser and appraisee at the beginning of the appraisal period. In

this way total score for performance targets (TPT) and average score for performance targets (AVG) are computed.

*Part V-* Staff performance evaluation (to be filled by the appraisers). The following calculations are done. Raw Weighted Score (RWS); Attribute weight (AWT); Mean Raw Score; Final Weighted Score (FWS); Weighted Score. The attributes, the indicators, rating (peers and supervisor) and AWT used are as follows:

<i>Attribute</i>	<i>Indicators</i>	<i>AWT</i>
A. Teaching	10	15
B. Research	2	15
C. Supervision	3	7
D. Attitude to work	6	5
E. Customer focus	6	10
F. Communication	4	9
G. Integrity	2	5
H. Teamwork, Interpersonal skill	5	5
I. Income generation activities	3	3
J. Leadership skills	4	5
K. Creativity and Innovation	3	5
L. Initiative and willingness to take on extra responsibilities	4	4
M. Administration	6	5
N. Community service and outreach	2	2
O. student evaluation		5

In this manner overall score (%) =  $(TWS + AWG) / 2$  is computed.

*Comments:*

*\*The peer weight is 2 and supervisor weight is 3. This distribution can produce biased results in some cases.*

*\*All the ten teaching indicators that are given equal weight are not uniform. These should be given the weight factors on the basis of relative importance.*

*\* In the total score of 500, only 5 points (that are visible in the form) are allocated for student evaluation, with only one indicator. This needs to be properly adjusted.*

*\* The allocated values for AWT should be justified logically.*

*Part VI-* Employee career development plan (the appraise fills this section in consultation with the supervisor).

*Part VII-* Comments/ Recommendations- This goes through four steps.

- (a) Supervisor's comments

- (b) Appraiser's comments (optional and may include comments about the appraisal and key areas of improvement within the university to enhance future performance. To be filled after the supervisor's comments).
- (c) Dean/Director's comments.
- (d) Vice Chancellor's/ DVC(A&F)/DVC(AA)/Principal's comments (as applicable).

*This part is mainly procedural*

### **Suggestions.**

By making use of the concepts of performance measurement and its framework, scales of measurement, and models, the format of staff performance appraisal currently in operation needs to be amended. Specification of variable be first done, followed by formulation and validation of the model. The suitable model for SOE would be the mixed model, where the adequate proportions need to be determined. Inclusion of both static and dynamic variables in some cases would be necessary.

- Relevant data be collected. Qualitative and quantitative be clearly separated.
- The evaluation form should be made short and compact. This can be done by removing parts II from the evaluation form and be separately attached as instruction sheet.
- Weight factors to be adequately decided that need to be logically supported and be allowed to become dynamic over the long period.
- Stakeholders responses should be assigned proper weight factors.
- Proper analysis should be done for the different types of data values.
- Periodic monitoring should be done, so that corrective measures be taken at suitable time.
- Planned and actual performances be compared at regular intervals.
- Efficient performance measurement and evaluation system would provide organizations an edge in the competitive environment, so as to derive comparative advantage.