SCIENTIFIC SYSTEMIC MANAGEMENT

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Fundamental Concepts. Training Digital Manual Using a Law of Nature, Chess vs. Computer and Pictured Grand Masters Games. Lessons of Rapid Chess and Effective Thinking

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Part one - THE FUNDAMENTAL CONCEPTS OF SCIENTIFIC SYSTEMIC MANAGEMENT

1. Why Do We Need Scientific Systemic Approach of Concepts

Success depends on our ability to develop a feasible plan and then to execute it organizing and managing our actions using relevant concepts in a precise manner.

The fact that actual definitions of all managerial concepts differ according to their author, can be considered the proof that they can be improved from the point of view of precision.

The great scientist Albert Einstein said: **"I don't like when it may be both in this way and in the other way. It should be this way, or not at all."**

Empirical definitions are typically independent, disconnected entities, developed using the *analytic approach,* which seeks to reduce a system to its elements and is less focused on interaction between them.

The *systemic approach* considers business organization and management as a complex, dynamic totality - *as a system* - and each component element as a part of this totality, strongly linked to other parts by precise connections, that have a great importance in obtaining the profit maximization.

The "System" Concept

A *system* is an ensemble of elements functionally interrelated to achieve a common objective.

Few ideas can compete with the *system* concept in terms of importance.

During the last few decades, this concept generated a real revolution in science, accelerating the learning process in almost all fields.

This concept gives priority to the *whole* over the *parts*.

Where we see only disparate elements of a system, this concept attaches much importance to relationships and interactions among them, and teaches us to understand the defined role of individual elements as parts of the whole they compose.

Therefore, this concept allows us to achieve a new mode of seeing and understanding things and phenomena.

It gives us a *systemic vision* on reality, a vision that is more profound and correct, and that allows us to get better results in all fields of activity.

The Cybernetic Systems

Systems that have the ability to self-regulation are called ***cybernetic systems***.

The capacity of self-regulation of cybernetic systems is based on the so-called *retroaction principle* or *feedback*.

According to this principle, the system assigns values to the permanent results of an activity, compares them to the awaiting results (or objectives), and establishes deviations.

These deviations are transformed then into actions that produce corrections in the system's work. Thanks to this mechanism of feedback, the system tends to eliminate its errors gradually, until the objectives are achieved.

Since 1948, *Cybernetics*, the science of feedback systems, has spread continuously and has received new definitions based on the fields to which researchers have applied it.

However, most of these definitions suggest the same idea: that ***cybernetics enssures the best model for managing (regulating) complex processes, regardless of their nature***.

Organization of a Cybernetic System

Seen from outside, every cybernetic system is like a "black box", an opaque whole, which hides an unknown process meant to achieve a certain purpose.

We can see only what gets in (input) and what gets out (output) from this box, not what happens inside.

If we open the box, we can observe the elements that compose the system, relationships among them, and the structure that allows achieving of a defined goal.

A system consists of at least two elements logically related to each other by their functions.

Taken separately, each element can be also considered a system.

Every complex system is formed by *subsystems*, and can be considered at the same time a subsystem of a higher-leveled other system.

Therefore, there is a *hierarchy of systems,* whereby the objectives of subsystems of a certain level derive from the objective of the system that these subsystems form, and so on.

If the system could be defined statically by its component elements, then dynamically it appears as a *typical complex of functional relations and interactions* among these elements.

Relations are not casual or changeable; they are derived precisely from the system's general objective.

That is why the system could be also defined as an *ensemble of tasks that are to be carried out under special conditions into a hostile environment.*

The *structure* of the system is defined by its construction, its architecture, and the way its parts are organized, closely depending on the whole they are forming.

The structure expresses quantitatively and qualitatively the content and internal constructive-functional logic of the system.

The specific features of a system's structure derive from the interaction among components on the one hand, and between the system and its components, on the other hand.

Organization of not very complex systems needs only three structural levels: *system*, *subsystems* and *elements*.

The very complex systems have more hierarchical structural levels.