

Le Chatelier's Laws and Principles of "*Le Taylorisme*"

Principle of opposition (or equilibrium, aka "Le Chatelier's Principle): Any system in chemical equilibrium—according to this principle—undergoes a change due to a shift in equilibrium factors in such a way that if this change occurred by itself, it would cause the opposite change in the considered factor.

Principles of Organization:

1. **The law of division of labor/Principle of Descartes:** "Every problem should be divided into as many parts as possible and as necessary to solve it best."
2. **The law of concentration** - of tasks, machines, people according to required output.
3. **The law of integration** – of the divided tasks

Stages of Organization

1. **Set a goal** that is *single, precise, limited, and useful*.
2. **Examine the means and conditions** that need to be applied to achieve the intended goal.
3. **Prepare the means and conditions** (tools/equipment/training) required for implementation.
4. **Implement** precisely according to the adopted plan.
5. **Control:** after each activity, the results should be checked to determine if the intended goal has been reached

Principles and Stages of the Scientific Method

1. **Law of causality** - At its core, science hinges on a fundamental *trust* in the unyielding nature of its laws, known as *determinism*.
2. **Detailed specification** of all the conditions on which each phenomenon depends, that is, its causes or factors.
3. **Ranking of factors** by importance. Experiments should be conducted economically. This means that the cost of the experimental resources used should correspond to the sought-after results.
4. **Measure and determine numerical relationships** - the results of measurements and experiments should be expressed in mathematical functions.

Scientific means to accomplish a goal.

1. *Observation*, which gives us the initial understanding of a phenomenon.
2. *Experimentation*, which allows us to establish first the qualitative and then the quantitative relationships between these phenomena.
3. *Calculation*, which, from undeniable experimental laws, derives further conclusions and infinitely expands our knowledge.

Guiding principles for teachers regarding habits that should be instilled in students.

1. Adopting a clearly defined idea of the intended goal.
2. Investigating the most appropriate ways to carry out a specific task.
3. Performing the work according to the chosen method.
4. Checking the actual result, its quality, and operating cost.

Fundamental requirements in the application of a task-based work system

1. Conduct preliminary studies to define the task.
2. Issue instructions to the workers, guiding them on how to execute the task.
3. Implement a compensation system aimed at motivating the worker to adapt to the task.

Human Factors

There exists another kind of scientific study which should receive special attention: it is the detailed examination of the motivations (drives) that prompt a person to act.

Three fundamental principles:

1. The factory worker is not merely a machine.
2. The worker is a thinking being.
3. The worker is a feeling being.

It is therefore necessary to examine their manual work, their thoughts, and their feelings.

Three types of relationships

1. cooperation,
2. teaching (transmission of information)
3. leadership

Characteristics of Taylor's System:

1. **General order:** applied to every manifestation of human activity and encompassing certain common-sense rules, certain principles of the scientific method.
2. **Practical applications:** mixed with these general rules, are some of their practical applications to various industrial issues, such as: boiler cleaning, power transmission using belts, metal machining on machine tools, storage of items during their manufacture, wage systems, and so on.
3. **Human factors:** connected with the first two, contains a set of synthetic regulations concerning factory administration and dealing with workers, that is, issues less related to manufacturing processes, but directly concerning the human factor.
4. **Execution:** This last part of Taylor's system is the easiest to implement immediately. All people are essentially the same, and there is little difference in the art of commanding. Therefore, it is understandable that these methods quickly aroused interest among industrialists, relegating the foundational principles, which these methods are merely individual applications of, to the background. Too often, we encounter attempts to mechanically apply Taylor's rules without delving into his philosophy. This is risky and leads to many disappointments.

Three key points of Taylor's System:

1. Preliminary studies should be conducted scientifically, based on precise measurements.
2. Monitoring the manufacturing process is the duty of leadership.
3. Friendly and cordial relationship between management and workers is required.