



Applied Systems Thinking

Use the Power of Structure to Create Lasting Change

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Practice
Article 4**

Defining Variables By David Peter Stroh

Variables are the nouns of Systems Thinking language. They are the key forces in a systems story that impact each other and change, or literally *vary*, over time. As such they are critical elements in building a compelling understanding of what has been happening and why. Systems Thinking has the advantage of being able to combine quantitative variables such as **profits** with qualitative variables such as **morale**.

The **importance of establishing clear variable definitions** can be summarized in the following story about a meeting Mike Goodman had several years ago with the CIO of Banc One. The bank was experiencing frequent computer crashes that led to pressure to increase storage capacity. The CIO had a purchase order for \$2,000,000 on his desk when Mike arrived, and together they looked at the trends associated with the problem.

The CIO's assumption was that the pressure was caused by rapid growth in **auto loan demand**, which was a key business variable tracked by the bank. However, when they spoke with people tracking the data, they discovered that this demand was not growing rapidly enough to warrant new capacity. Instead, what was increasing dramatically was data associated with **auto loans denied**. Because the bank was only obligated to track this data for one month, the CIO decided to remove data stored on auto loans denied past this period – and saved the company \$2,000,000 in additional capacity.

Developing clear variable definitions is made easier by following a few guidelines:

- Use nouns or simple noun phrases. One way to test if you have a noun is to place the words “Level of ...” at the beginning of it,

Example: Level of profits or level of morale

Beware using nouns that do not communicate a level of something that changes over time, e.g. “strategy” or “culture.” Instead, ask what is it about a factor that varies over time and glean a variable from your answer. For example, a strategy might vary over time in relation to its **focus on service-related business** and culture might vary in its **attention to employee input**.

- State most variables in positive or neutral terms, such as **customer satisfaction** or **energy**. Occasionally, if people’s behavior is driven by a negative factor such as **Pressure** or **Accidents**, it helps to state that variable in negative terms;
- Remove qualifiers such as “increasing” or “decreasing” from your variable definition;
- If you begin by brainstorming a longer list of possible variables, see if you can cluster them to focus on just 3–5 initially. You can always enrich your analysis later;
- Ensure that at least one of your key variables is a quantifiable business or organizational imperative that people are concerned about, e.g. **income** or **costs**.

We were once asked to list the **top 10 variables** we’ve encountered in our work over the years. Upon reflection we identified only **five categories** that comprise most of the variables we’ve identified and use in our work. Within each category we note a number of more specific variables that appear frequently.

1. Goals

β Desired level of_____

2. Thinking/feeling/perceptions

β Level of commitment to _____

β Level of alignment around _____

- β Level of clarity about _____
- β Perceived level of _____
- β Morale

3. Demand

- β Pressure to _____
- β Need for _____
- β Demand to _____
- β Gap between _____ and _____
- β Competitive Pressure

4. Supply

- β Capacity for _____
- β Ability to _____
- β Available resources (e.g., time/people/experience) for _____
- β Investment in _____

5. Results

- β Actual level of performance (e.g., profitability, revenue, cycle time, cost, turnover, customer satisfaction, market share)
- β Quality of _____

About the Author:

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