A Holistic Introduction to Systems Thinking

While the story about the coronavirus pandemic is far from being fully written, key lessons have already emerged for business leaders. For starters, Covid-19 has wreaked havoc on global supply chains, with 94% of companies reporting pandemic-induced disruptions to their processes. Of that number, 17% experienced "severe" disruptions.

As organisational leaders debate how they could have handled the crisis better, one thing is clear: complex interwoven operations across multiple countries require detailed contingency plans against disruptions.

This is where systems thinking can help.

What Is Systems Thinking?

Systems thinking is an approach that encourages people to look at behaviours and processes as parts of a system. Systems thinking offers several benefits, but they ultimately boil down to quick and efficient problem-solving, addressing what could be the root cause of a problem.

For example, if Component A doesn't behave as expected, how does it affect Component B? How about Component C?

From a management standpoint, systems thinking posits that leaders make better decisions if they look at functions, processes, and people as part of a system. It's here where frameworks such as the "Iceberg Model" help in explaining how organisations behave as systems.

- The "tip" of the iceberg comprises **events**—the day-to-day things that happen in the organisation, such as products being sold and customers leaving feedback.

- Below the event level are **patterns**—recurring events that happen again and again. Customers may be complaining about the same problem, products may sell out during particular times of the year.
- At the bottom of the iceberg are **systemic structures**—the things that lead to patterns and observable events.

Conversely, failing to use systems thinking can lead to myopic decisions with costly and damaging results.

Of course, all this begs the question: what exactly counts as a system?

As author and systems thinking evangelist Daniel H. Kim explains, "A system is any group of interacting, interrelated, or interdependent parts that form a complex and unified whole that has specific purpose."

Without these interdependent parts, you would simply have related components that comprise a *collection*. For example, a restaurant is a system with interconnected people, teams, and activities. The kitchen pantry is a collection of ingredients.

Key Principles of Systems Thinking

Systems thinking is a broad topic with multiple aspects to it. The simplest way to understand these concepts is to look at systems thinking's foundational principles. These include:

- **Purposefulness** - Every system must have a purpose that defines it as a whole, rather than just one of its many parts. Systems thinkers think in terms of how actors in a system behave or have been designed to contribute to a greater goal or purpose.
- **Wholeness** - A system is greater than the sum of its parts; that is, the elements in a system must show characteristics of cohesion and interaction. Systems thinkers understand that these interdependencies are what make a system distinct from a collection of parts.
- **Order** - Systems thinkers know that each part of a system complements one another. These parts are arranged in a specific order to ensure the system functions as intended. As is often the case in many systems, the interconnectedness of these parts leads to something new (i.e., synthesis).
- **Feedback** - Systems remain stable through the transmission and return of information. Feedback is how system thinkers know that the system is functioning relative to its optimal state.
- **Patterns** - Components in systems will exhibit patterns in behaviour or function. If you observe a system over a period of time, you may eventually see patterns – for example, a large volume of customers coming in at certain times of the day. Systems thinkers think about how to adapt the system to these patterns.

Type of Systems Thinking Tools

Systems thinkers have an array of tools that enable them to analyse systemic behaviours and activities. These systems thinking tools fall into four broad categories: Brainstorming Tools, Dynamic Thinking Tools, Structural Thinking Tools and Computer Based Tools- each one revolving around a specific activity or function. For example, the following tools are used as **Dynamic Thinking Tools**:

- **Behaviour over time (BOT) graph**. Also known as reference mode diagrams, these graphs are used to visualise how variables behave over time, often to reveal interdependencies between them.
- **Causal loop diagram**. This graph uses cause and effect linkages to identify reinforcing processes that amplify change and balancing processes that support equilibrium.
- **Systems archetype**. This diagram helps identify and manage common system structures such as "success blockers," "drifting goals," and "solutions that fail."

Why Systems Thinking Is Essential to VUCAH

Systems thinking is particularly useful when understanding VUCAH (volatility, uncertainty, complexity, ambiguity, hyperconnectivity) behaviours in organisations. Instead of taking a reactive, top-down approach to problem-solving, systems thinking looks at VUCAH factors as inherent characteristics of a problem.

For example, when a retailer runs out of product stock, its decision-makers can "zoom out" using a causal loop to frame the problem as a result of patterns in behaviour (e.g., a spike in seasonal demand, inclement weather delaying supplies).

When investigating the cause of a problem, systems thinkers can investigate feedback loops to understand how structures generate the VUCAH behaviours that cause issues. Defining cause and effect relationships can reveal insights into how stockouts are a result of poor operational policies.

Looking at the Big Picture With Systems Thinking

Systems thinking allows decision-makers to see the big picture—the real macro-level impact of their organisation within a larger ecosystem. It's a mindset that helped Momofuku Ando, the inventor of instant ramen noodles, make Nissin Foods *the* standard in the instant noodles industry.

Rather than leverage his secret recipe to solidify his company's market position, Ando reportedly chose to share it with Nissin's competitors.

By giving away his secret recipe, it became the dominant design or the reference for the industry.

This isn't to say that Ando was knowingly using systems thinking. But his example still points to how looking at the interconnected elements of a system, at both the granular and macro level, can point to unexpected solutions that yield substantial benefits for your organisation.

To better understand systems thinking and leverage its effects on professionals and enterprises, SIM Centre for Systems Leadership (CSL) offers programmes that help leaders develop their systems leadership capabilities, leading to greater individual and organisational success.

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