COUNTERFACTUAL ANALYSIS

1. What is Counterfactual Analysis (CA)?

Counterfactual analysis is a method used to understand what could have happened under different circumstances by considering alternative scenarios or events that did not actually occur. It involves comparing the actual world to a hypothetical world where certain variables or actions are changed, helping to assess the impact of those changes.

Counterfactual analysis is the process of imagining and analysing "what if" scenarios to see how changing certain factors might have led to different outcomes.

In the counterfactual analysis, the outcomes of the intervention are compared with the outcomes that would have been achieved if the intervention had not been implemented. The method of counterfactual impact evaluation allows to identify which part of the observed actual improvement (e.g. increase in income) is attributable to the impact of the intervention (since such improvement might occur not only due to the intervention but also due to other factors, e.g. overall economic growth).

2. Who developed it?

The origin of counterfactual thinking has philosophical roots and can be traced back to early philosophers such as Aristotle and Plato, who reflected on the epistemological status of hypothetical statements and their hypothetical but plausible consequences.
Counterfactual thinking refers to a psychological concept involving the human tendency to create possible alternatives to events that have already occurred; counterfactual thinking is, as the adjective states: "contrary to the facts”These thoughts typically begin with "What if?" or "If only I had..." and occur when we consider how certain events might have turned out differently.

3. What types of initiatives is CA useful for?

Counterfactual analysis is useful for a wide range of initiatives and organisations across various fields. We can identify two key areas:

1. Project Management

Counterfactual analysis can be particularly valuable for several types of initiatives and organisations in project management. It helps project managers and teams assess potential outcomes, understand the impact of decisions, and improve future project planning and execution. Specific applications include:

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2. Public Policy and Government

Governments can use counterfactual analysis to evaluate the effectiveness of policies and assess the potential impacts of proposed regulations or interventions. Specific applications include:

Policy Evaluation: Comparing actual outcomes with hypothetical scenarios where the policies were not implemented to evaluate the effectiveness of policies.

Impact Assessment: Assessing the potential impacts of proposed regulations or interventions before they are implemented, helping to make informed decisions.

4. What are the main objectives of CA?

The aim of the classic counterfactual approach is to estimate the effects of a cause, and thus to establish a causal link between the a causal link between the outcome and the effect of an intervention. The resulting analysis focuses on the difference between what is observed in the presence of the intervention (actual situation) and what would have happened if the same intervention had not been implemented (counterfactual).
The aim of the classical' counterfactual model is to identify a causal link between an effect and an intervention, not to understand why and how the intervention is not to understand why and how the intervention produced that particular effect. The interest of the analysis is not to understand why and how that causal link exists, but only to determine whether it does or does not exist, and whether it does or does not exist. there is a link, and if so, to what extent (Barberi et al, 2013).

The main objectives of counterfactual analysis are to understand the impact of different actions, decisions, or events by comparing actual outcomes with hypothetical scenarios. These objectives aim to achieve a deeper insight into causality, inform decision-making, and improve future outcomes. Here are the key objectives:

Evaluate Causality

Objective: Determine the causal relationship between actions or events and their outcomes.

Aim: Understand what factors are directly responsible for observed results.

Assess Effectiveness

Objective: Evaluate the effectiveness of policies, interventions, or strategies.

Aim: Determine if a specific action or policy achieved its intended goals.

5. How does it work?

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In order to illustrate the workings of counterfactual analysis effectively, we will do so through this practical scenario:

Imagine living in a small village where most people work in the fields. Every year, the village decides to invest in a new irrigation system for the fields in order to increase agricultural productivity. Last year, the new irrigation system was installed in half of the fields, while the other half of the fields remained with the old irrigation system.

Now we want to know how much the new irrigation system has affected crop production in the village. Using counterfactual analysis, we can imagine a 'counterfactual' world in which the new irrigation system was never installed and compare it with what actually happened in our village.

In this narrative, our control group is represented by the fields with the old irrigation system, reflecting what would have happened without the intervention of the new system. The experimental group is represented by the fields with the new irrigation system.

At the end of the growing season, we observe how the farmers harvest their crops.
We then take a close look at the yield of the fields with the new irrigation system and compare it with the yield of the fields with the old system.

We find that the yields in the fields with the new irrigation system are significantly higher than those in the fields with the old system. Through counterfactual analysis, we can conclude that the installation of the new irrigation system has had a positive impact on crop production in our village.

This story illustrates the concept of counterfactual analysis in the context of everyday life, showing how we can imagine an alternative world without a particular intervention and compare it with what actually happened in order to assess the impact of that particular intervention.

6. What skills and knowledge are useful for using the CA?

Identifies the skills and knowledge needed to use the METHOD effectively.

- Able to carry out statistical analysis aimed at evaluating
- Detailed knowledge of the phenomenon of interest
- Statistical and Quantitative Analysis
- Mathematical modelling: Creating models that represent different scenarios.
- Simulation software: Using software tools to simulate potential outcomes.

Knowledge

- Counterfactual reasoning: Grasping the theoretical foundations of counterfactuals and their logical implications.

7. USEFUL LINKS AND RESOURCES

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