

SHIFTING THE FOCUS OF DISCUSSION: FROM COST (UNDER)ESTIMATION TO COST REDUCTION

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WHY ARE THERE COST OVERRUNS IN INFRASTRUCTURE PROJECTS?

FLYVBJERG (2002)

Causes

- Deception: Strategic misrepresentation
- Delusion: Optimism bias

Countermeasure

- Reference class forecasting of costs

LOVE (2018)

Causes

- Changing conditions, requirements, and scope

Countermeasure

- Better cost estimating
 - BIM as a promising tool for that

EVALUATION OF THE DEBATE

- In the discussion between Love and Flyvbjerg, there is a fundamental misconception around cost management: it is considered to be akin to natural science

NATURAL SCIENCE APPROACH TO COST MANAGEMENT

- Assumes that the observer is outside the process where costs accrue, and cannot influence it
- Example: Building of an anthill
- However, costs of a construction project can be influenced in many ways by participants internal to the process: client decisions, good management, etc. – another approach is needed!



Costs do not exist to be calculated.
Costs exist to be reduced.

Ohno, T. (2012). *Taiichi Ohno's Workplace Management: Special 100th Birthday Edition*, McGraw Hill.

TECHNICAL (ENGINEERING) APPROACH TO COST MANAGEMENT

Theory

- Costs are both starting points and outcomes from our designing and planning and controlling.
- We can influence them.

Methods

- Cost prediction
- Steering
- Better decision-making
- Creativity
- Waste elimination

COST MANAGEMENT IS REASONING, DONE THROUGH INFERENCES

- Deduction: Reasoning forward
- Regression: Reasoning backward
- Induction: Drawing conclusions on a population from a sample
- Abduction: Creative leap to a solution

Inferential questions in cost management

- For a client, there are three questions of immediate interest in relation to cost – each triggers a particular inference:
 1. Given a scope or design, how much will it cost?
 - Deduction
 2. Given a cost (or price), what will I get?
 - Regression
 3. Given a difference between the estimated cost and the cost that can be afforded, how can the project be realized?
 - Abduction
- Note that there is an additional, fourth question in the background
 4. Given recent realized costs, which cost data should I use for my project?
 - Induction

TABLE

<i>Method in the technical approach to cost management</i>	<i>Primary inference types</i>	<i>Secondary inference types</i>
Cost prediction	Deductive and inductive inferences	-
Steering	Regressive inferences	Deductive and inductive inferences
Better decision-making	Regressive and deductive inferences	Inductive inferences
Creativity	Abductive inferences	Deductive and inductive inferences
Waste elimination	Regressive inferences (for finding the root causes for waste)	Deductive and inductive inferences

Table 1. Methods and their inference types in the technical approach to cost management

HOW TO GET THE TECHNICAL APPROACH TO COST MANAGEMENT REALIZED?

- Regressive inferences
 - Especially in the conceptual phase
 - Cost per functional unit/the unit method
 - Need for abduction when conflicts between design criteria must be resolved
- Abductive inferences
 - Cannot be conducted in a deliberate manner
 - However, research has pinpointed factors which are encouraging or discouraging creativity

<i>Factor influencing creativity</i>	<i>Corresponding feature in the TVD practice</i>
Progress principle	The progress towards the target cost is prominently visible.
Intrinsic and extrinsic motivators	Intrinsic motivation is provided through progress, and such extrinsic motivators as the gain/pain sharing mechanism and the clear targets may act in a synergistic manner
Work environment	Many of the stated work environment factors may exist in an TVD environment. Especially, cost reductions are expected to occur over the project duration, and thus there is sufficient time.
Collaboration and discussion	Both wide collaboration and one-to-one discussions are encouraged.
Affect	Applied methods, like Last Planner, lead to positive mood.

Table 2. Factors influencing creativity and corresponding features in TVD

CONCLUSIONS

- Cost management is not (only) about predicting costs – it is about reasoning relevant to costs
- Reasoning is carried out through different types of inference: deduction, induction, regression, abduction
- The common natural science approach to cost management, subscribed by Flyvbjerg and Love, leads to the dominance of deduction and induction in handling with costs
- We recommend using regressive and abductive reasoning actively and systematically for controlling and reducing costs (technical approach to cost management)

THANK YOU!

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