ACTIVITY OVERLAPPING IN CONSTRUCTION PROJECTS AND THE TIME-COST TRADEOFF FUNCTION

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ABSTRACT

Keywords:

1. INTRODUCTION

- The demand for project completion in a shorter duration
- What is fast tracking, what is overlapping?
- Other terminologies: concurrent engineering, parallel engineering, agile, etc.
- OL in product development and project execution
- The objective: insight into the overlapping mechanism.
- Research methodology: LR, semi-structured interviews

2. OVERLAPPING PRINCIPLE

2.1. Types of Activity Relationships

- Dependent activities, 2)Semi-independent activities, 3) Independent activities, 4) Interdependent
- Use prasad's schematics
- Explaining how each type is overlapped and what is the risk

2.2. The Mechanism of Activity Overlapping

- Mechanism of overlapping two dependent design activities, use a schematic
- Preliminary information, final information, risk of change and risk of rework
- Relation between amount of rework and amount of overlapping, the more overlap the more risk of rework, what is the maximum risk and what is the worst scenario?
- How to apply the mechanism on other types of activity dependency

3. OVERLAPPING TIME IMPACT

- Indicating the real overall timesaving of design activity overlapping in a project (use a schematic)
- The amount of time saving = OL – Rework

4. OVERLAPPING COST IMPACT

- Timesaving (due to overlapping) benefits: earlier operation, earlier income, time to market, increased market share, tax reductions, reduced payback period, increased prestige, etc.
- Overlapping disadvantages: more overlapping results in more changes resulting in more rework resulting in more expenses + quality or safety issues
- A balance/tradeoff is required between the overlapping timesaving benefits and its risks and costs: overlapping optimization

5. OVERLAPPING TIME-COST TRADEOFF

- How to convert risks of overlapping into equivalent costs. What are the costs?
- How to calculate overlapping financial benefits
  - Daily benefits resulting from saving indirect costs
  - Daily incentive amounts for early completion according to the project contract
  - Daily benefits of new opportunities obtainable because of early completion
  - Daily benefits of gaining reputation for timely finishing the project

5.1. Formulating Time-Cost Tradeoff

- The objective is to minimize costs and maximize benefits of overlapping= maximizing the benefit function in the formula:
- Z= sum of benefits – sum of losses

6. CONCLUSIONS

REFERENCES