

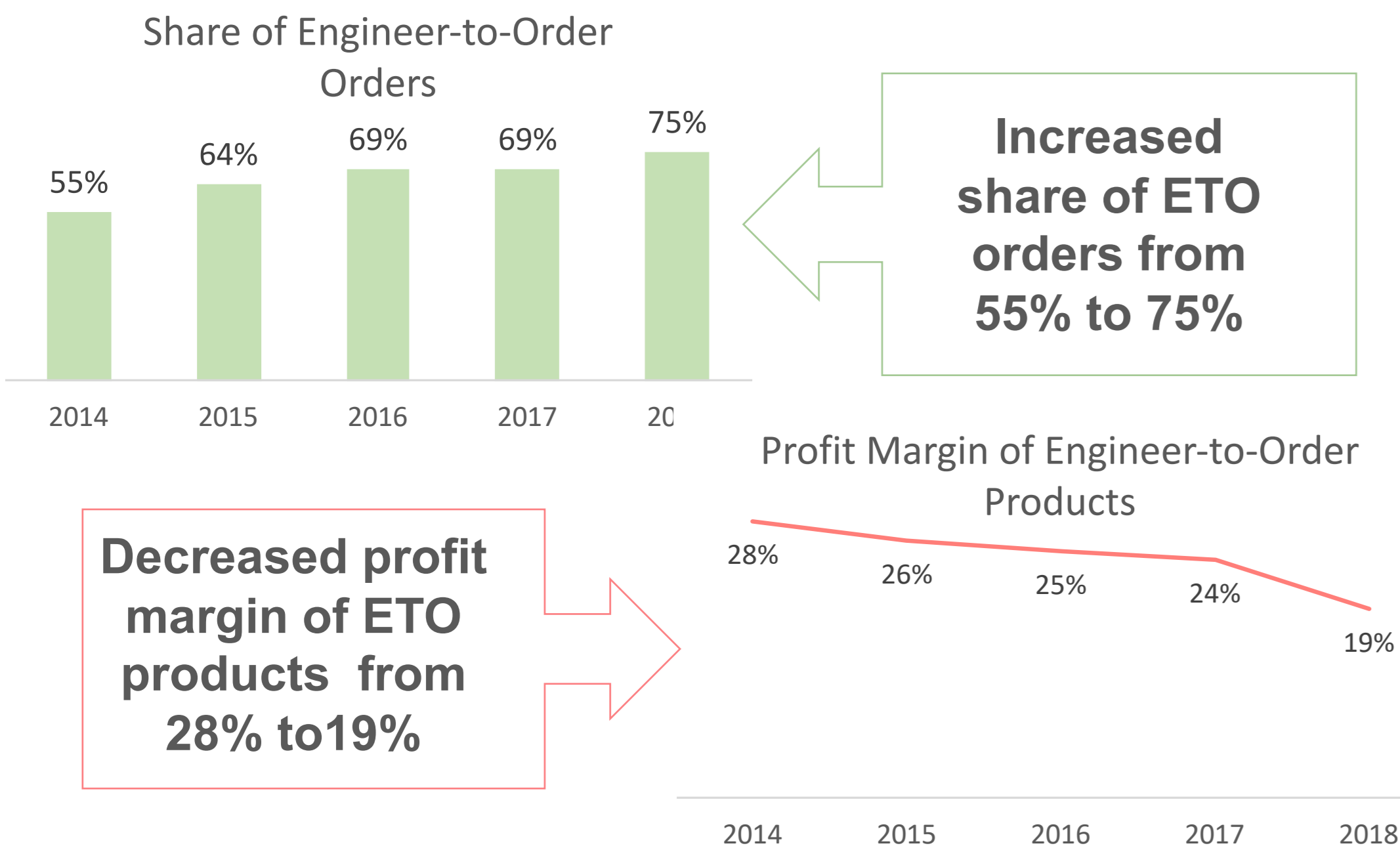
# Developing a Production Planning Model for a Contract Manufacturer

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 Sponsor: ZY Machining & Distribution



## Motivation / Background

### Contract manufacturing industry is growing rapidly



## Key Question / Hypothesis

- How can the contract manufacturer ensure:
  - Feasible Production Plan
  - For ETO Product
  - With Minimal Cost
- How to account for the process uncertainty

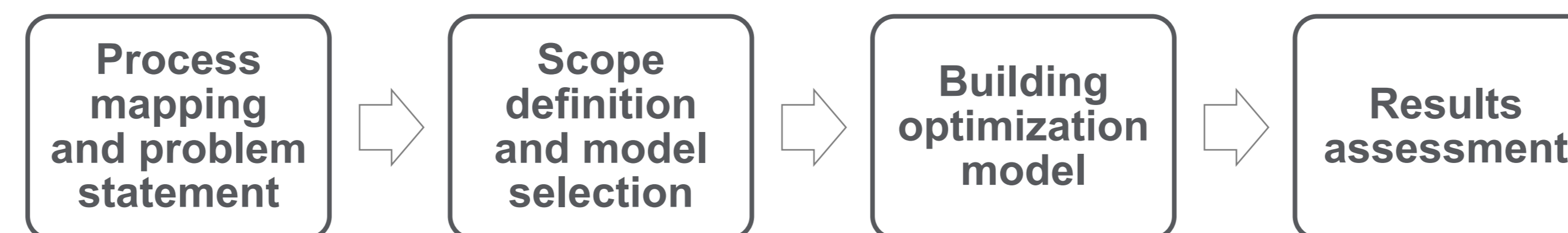


## Relevant Literature

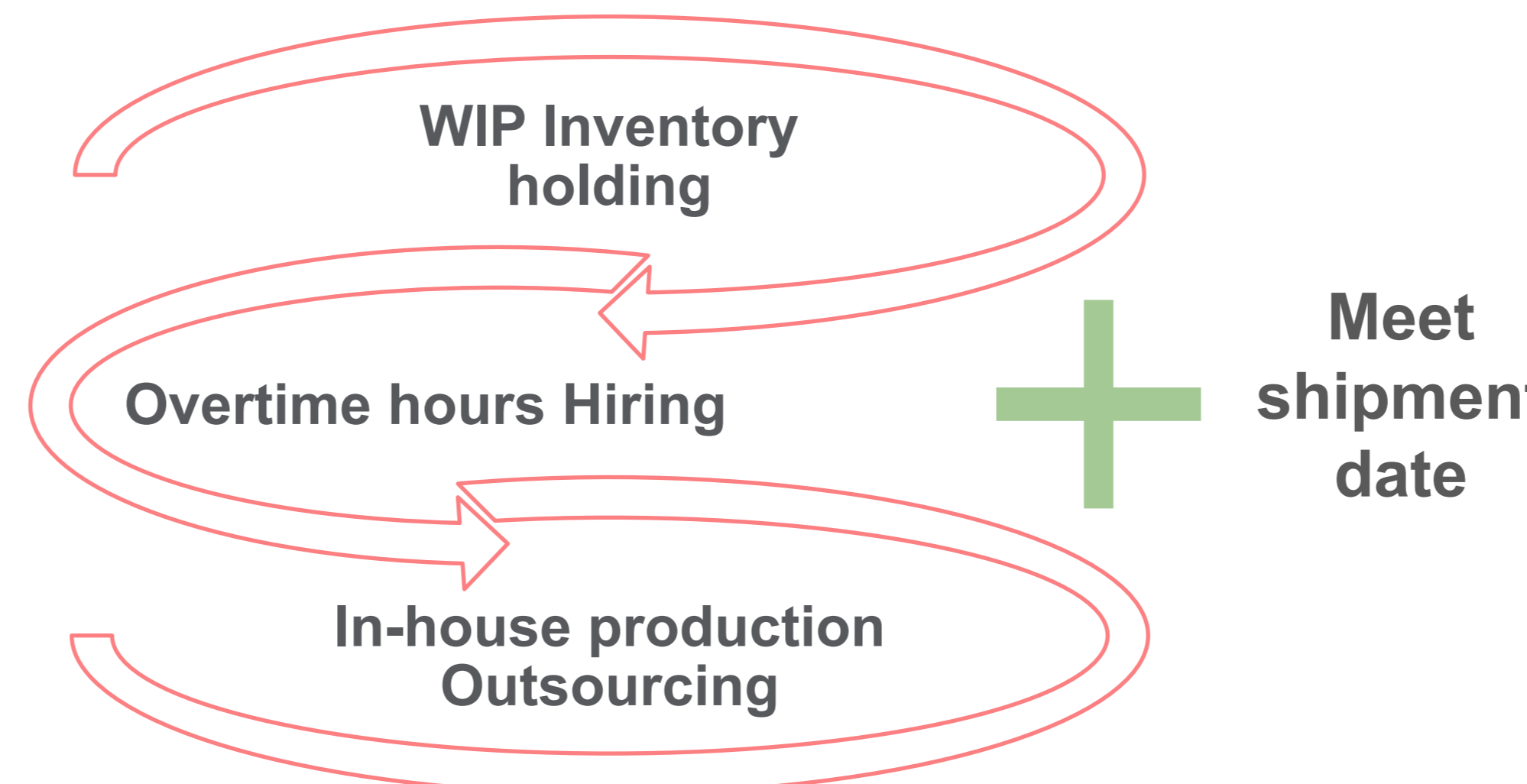
- Khakdaman et al. 2015. Tactical production planning in a hybrid Make-to-Stock–Make-to-Order environment under supply, process and demand uncertainties: a robust optimisation model. *Int J Prod Res.* 53, 1358–1386
- Mula et al. 2006. Models for production planning under uncertainty: A review. *Int J Prod Econ.* 103, 271–285



## Methodology



Minimize costs



## Initial Results

- Formulated MILP Cost Optimization Model
- Performed Shadow Price Analysis
- Scenario Analysis for Process Uncertainty



## Expected Contribution

- Our model will be used by the sponsor company:
  - Guideline for APP to ensure feasible production plans
  - Foundation for price quotes and sales & operations coordination
  - Plan with minimal production costs
  - Insights on strengthening constraints
- Developed model could be used by any company with similar manufacturing environment

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