

DECIDING BETWEEN PREFABRICATION AND ON-SITE CONSTRUCTION: A CHOOSING-BY-ADVANTAGE APPROACH

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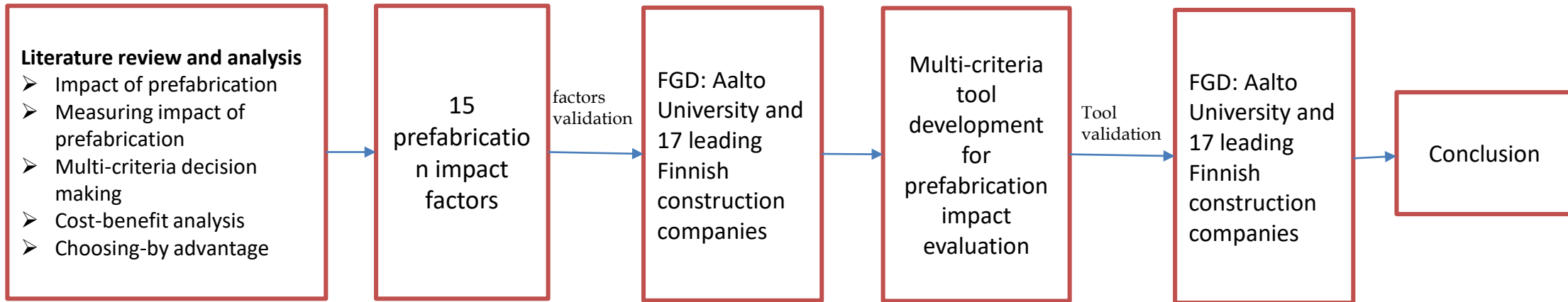
Agenda

- Background
- Method
- Prefabrication impact factors
- Prefabrication impact evaluation process
- Conclusion

Background

- ❑ Multiple Impacts of the prefabrication: [cost, time, waste, safety, ergonomics](#)
- ❑ Limited tools to evaluate impacts: [Surveys \(Quality\)](#), [Design Structure Matrix \(Environmental Impact\)](#), [Cost-benefit –analysis \(Cost\)](#), [Case studies \(Safety and Health\)](#)
 - No proper methods for multiple factors evaluation
- ❑ Purpose
 - Development of multifactor MCDM tools to evaluate impact of prefabrication
- ❑ Tool components:
 - Cost-benefit-analysis: [Monetary factors evaluation](#)
 - Choosing-by-advantage: [Non-monetary factors evaluation](#)

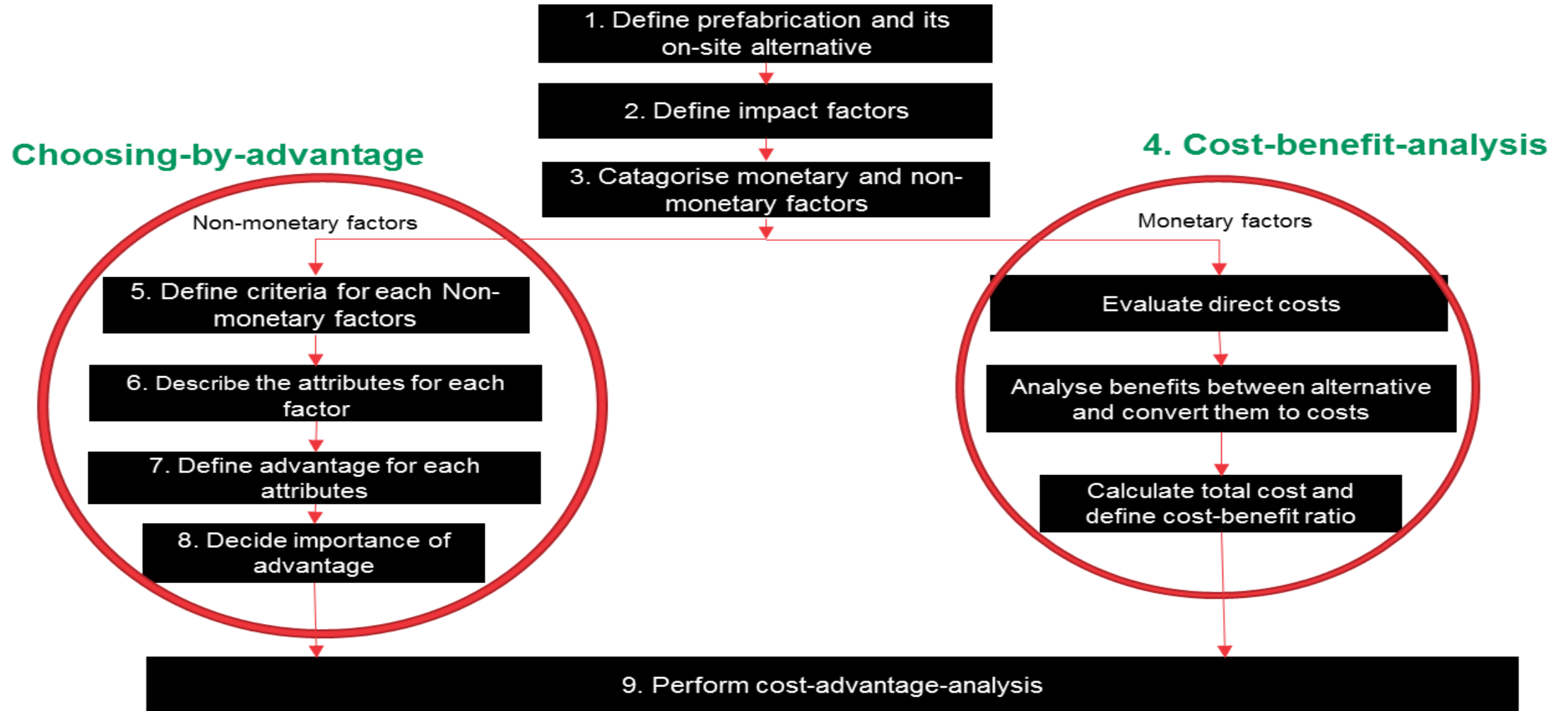
Method



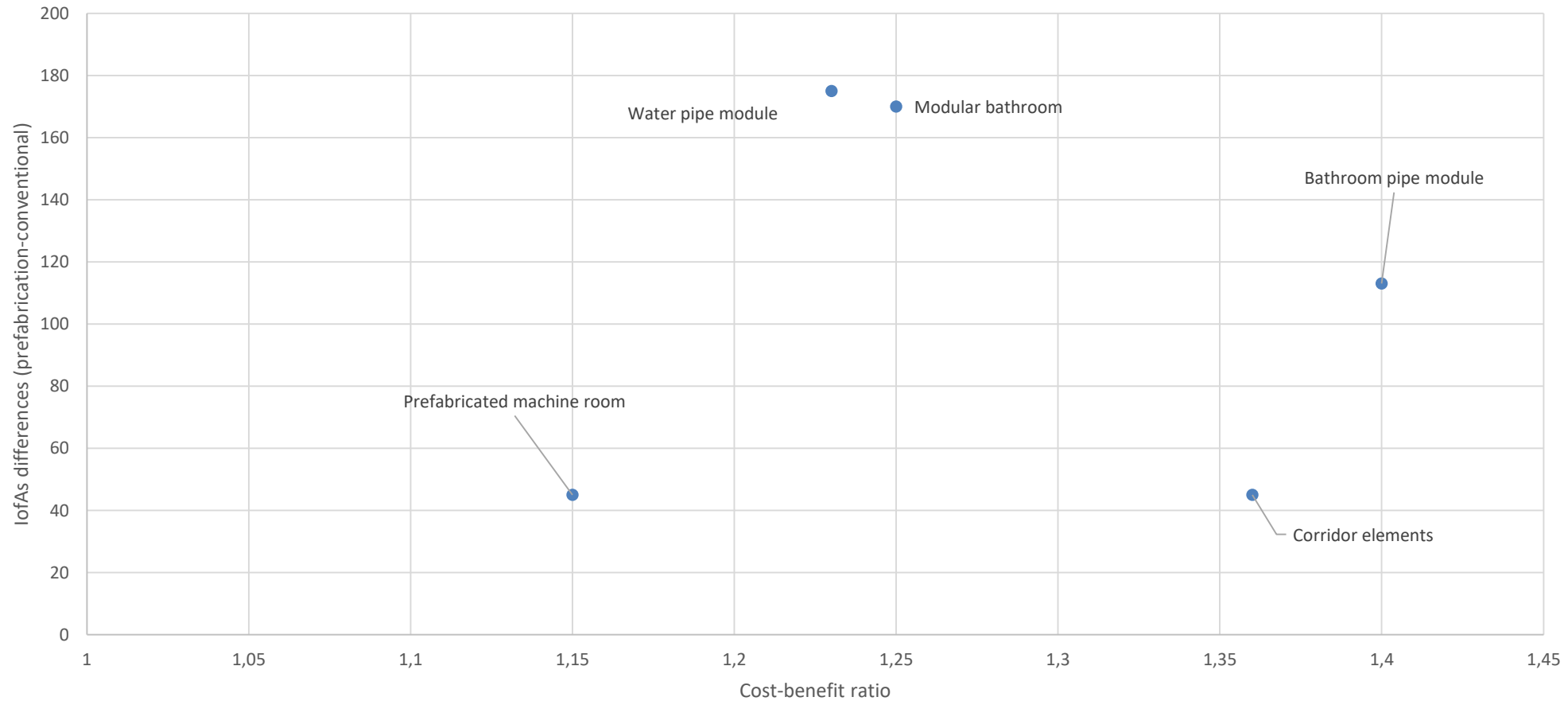
Prefabrication impact factors

Impact factors		
➤ Project schedule	➤ Quality	➤ Site deliveries and supplies
➤ Waste and disposal	➤ Surrounding environment	➤ Sub-trade activity on site
➤ Safety (worker and environment)	➤ Design costs	➤ Weather conditions
➤ Ergonomics	➤ Design flexibility	➤ Procurement
➤ Labour and material costs	➤ CM/GC coordination costs	➤ Maintenance

Process of prefabrication impact evaluation



Importance of advantage difference vs cost benefit ratio



Conclusion and contribution

- ❑ **Novel MCDM tools based on 'cost' and 'value' prospective**
- ❑ **Combination of CBA with cost-benefit analysis is suitable approach**
 - Evaluates based on the several impact factors
 - Lowers the uncertainty of assumptions
- ❑ **Helps to neutralize the cost debate of implementing prefabrication**



Thanks!