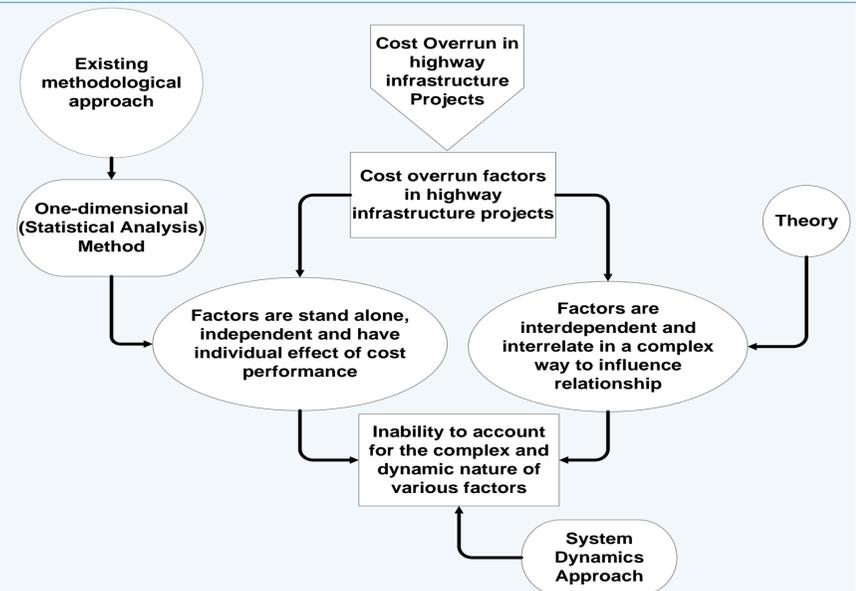


Background

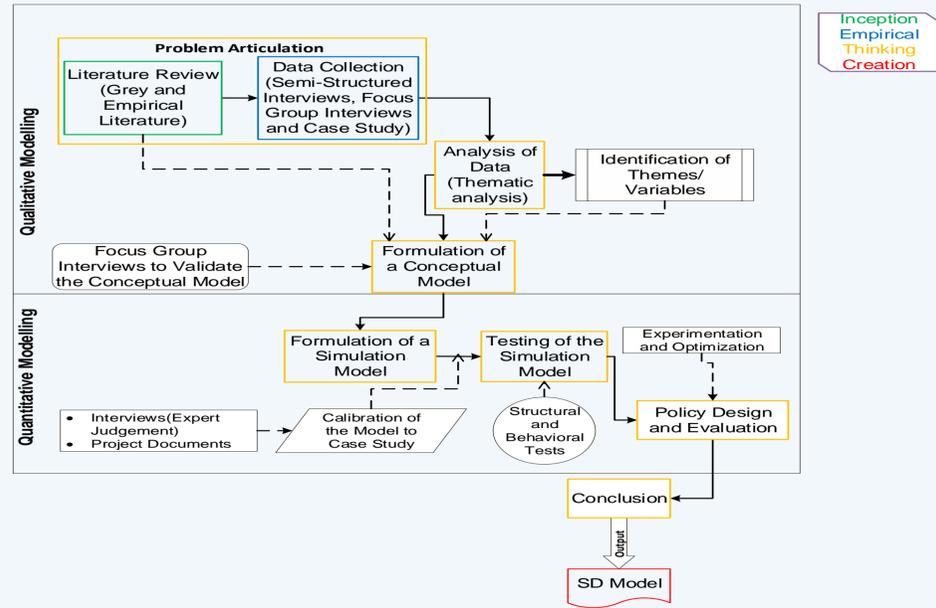
- Highway projects globally has somewhat been a hit on the headlines due to ubiquitous non performance in terms of cost of which significant cost overrun ranging between 7.9% to over 100% has been found.
- The non performance has been attributed to numerous factors of which are geographically diverse.
- A significant effort has been made in understanding the drivers of the poor cost performance and their impact on projects using a variety of techniques (Statistical).
- This research proposes adopting a system dynamic technique to assess whether it will improve our understanding of the problem of cost overrun particularly in highway infrastructure projects.



Method

Techniques:

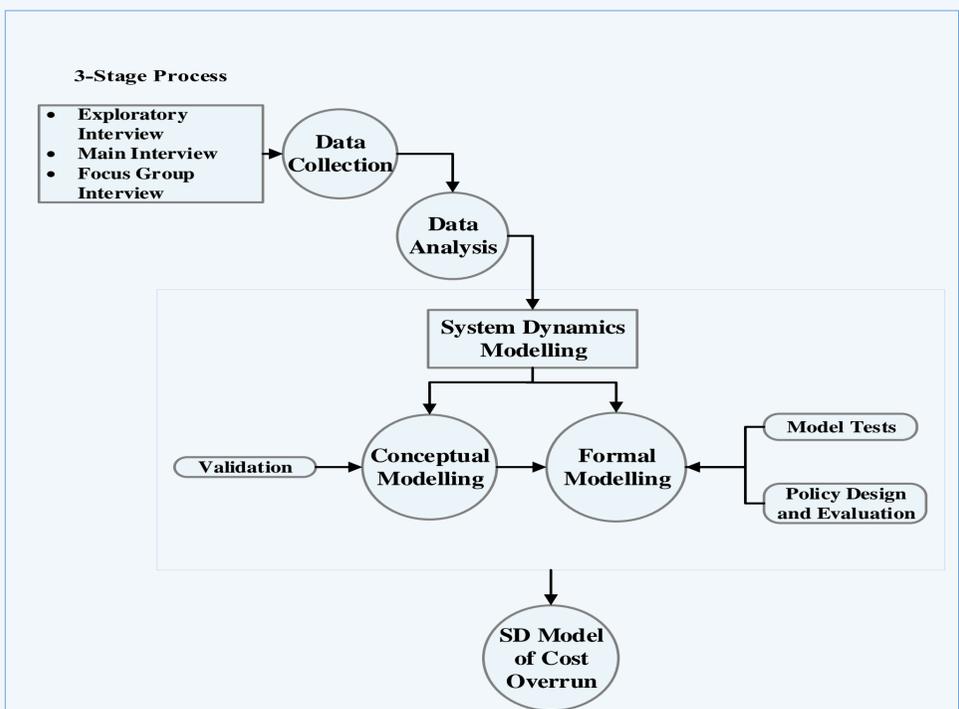
- Literature Review
- Document Analysis
- Semi-Structured Interviews
- Focus Group
- Questionnaire
- Thematic Data Analysis
- System Dynamics Modelling
- ✓ Conceptual Model
- ✓ Simulation Model



Discussion

- Evidence has shown that, the statistical analysis approach seems to explain the effect of individual factors from among the web of various influencing factors of cost overrun and could not account for the effect of all the influencing factors which have complex and dynamic interactions with each other.
- Therefore, system dynamics, which is an approach based on understanding the dynamic behaviour of the whole system i.e. how a factor in a system interact with one another and how a change in one variable affect the other overtime which in turn affect the original variable, can account for the shortcoming of the existing statistical approach.

Future Work



Preliminary Findings

- The problem of cost overrun is complex and is related to a series of factors.
- The factors are rarely independent, predictable and linear and thus, interrelate with each other in a complex way to influence relationship and impact on the cost performance of projects.
- Existing (statistical) techniques assumes the factors are stand alone and independent occurring at a single point in a network of causal links without considering the whole system and how these factors interact with each other.
- The approaches therefore negates the peculiar characteristics attributable to complex problems such as cost overruns and as such are not without some defects.
- System dynamics approach is capable of modelling complex problems by considering all influencing factors to a particular problem.

References

- BOATENG, P., CHEN, Z., OGUNLANA, S. & IKEDIASHI, D. 2012. A system dynamics approach to risks description in megaprojects development. *Organization, Technology & Management in Construction*, 4.
- AHIAGA-DAGBUI, D., D SMITH, S., LOVE, P. & ACKERMANN, F. Spotlight on construction cost overrun research: superficial, replicative and stagnated. 31st annual ARCOM conference, 7-9 September 2015 Lincoln, United Kingdom. ARCOM, 863-872.
- FLYVBJERG, B., ANSAR, A., BUDZIER, A., BUHL, S., CANTARELLI, C., GARBUIO, M., GLENTING, C., HOLM, M. S., LOVALLO, D., LUNN, D., MOLIN, E., RØNNEST, A., STEWART, A. & VAN WEE, B. 2018. Five things you should know about cost overrun. *Transportation Research Part A: Policy and Practice*, 118, 174-190.
- STERMAN, J. D. 2000. *Business dynamics: systems thinking and modelling for a complex world*.