



PROJECT MANAGEMENT  
CENTER FOR EXCELLENCE

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# RISK AND URBAN TRANSPORTATION PROJECTS- A CASE STUDY OF MUMBAI MONORAIL

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# Introduction: Urban Transportation – Risks

Research has established that infrastructure is the key to economic growth, poverty alleviation, and environmental sustainability (Thwala 2009)



# Introduction: Urban transportation – Risks

However infrastructure projects have risks associated, because they involve many stakeholders, contracts and contractors and the goal of identify risks and categorize them into risk factors, is to prevent negative events with large impacts on the results of the projects (Girardi et al., 2018).

# Introduction - Mumbai

- Mumbai is a metropolitan city located in the state of Maharashtra in India.
- It is often regarded as the financial capital of India.
- With a population density of 83,660 persons per square mile. It is one of the most densely populated cities in the world.
- Current Mumbai is heavily dependent on the semi-urban railway network developed during the 19<sup>th</sup> century.

# Introduction - Mumbai

- Buses, cars, taxi, boats and ferries are also used for inter-city transportation.
- During the past few decades new satellite towns have been developed.
- The semi-urban railway system and the buses account for nearly 90% of the passenger traffic connect both Mumbai and the satellite towns.



# Introduction – Monorail system

- Single rail track system, Elevated system
- Require less space, high capacity to carry per hour per direction
- Highly flexible & provides sharp turns
- Cost of project lesser as compared to metro or conventional rail network.

# Mumbai Monorail Project

- 8 lines were initially proposed.
- Only 1 line was constructed in 2 phases
  - Phase I – 7 stations.
    - Construction started in 2009
    - Operations commenced 2014
  - Phase II – 11 stations
    - Operations commenced 2019

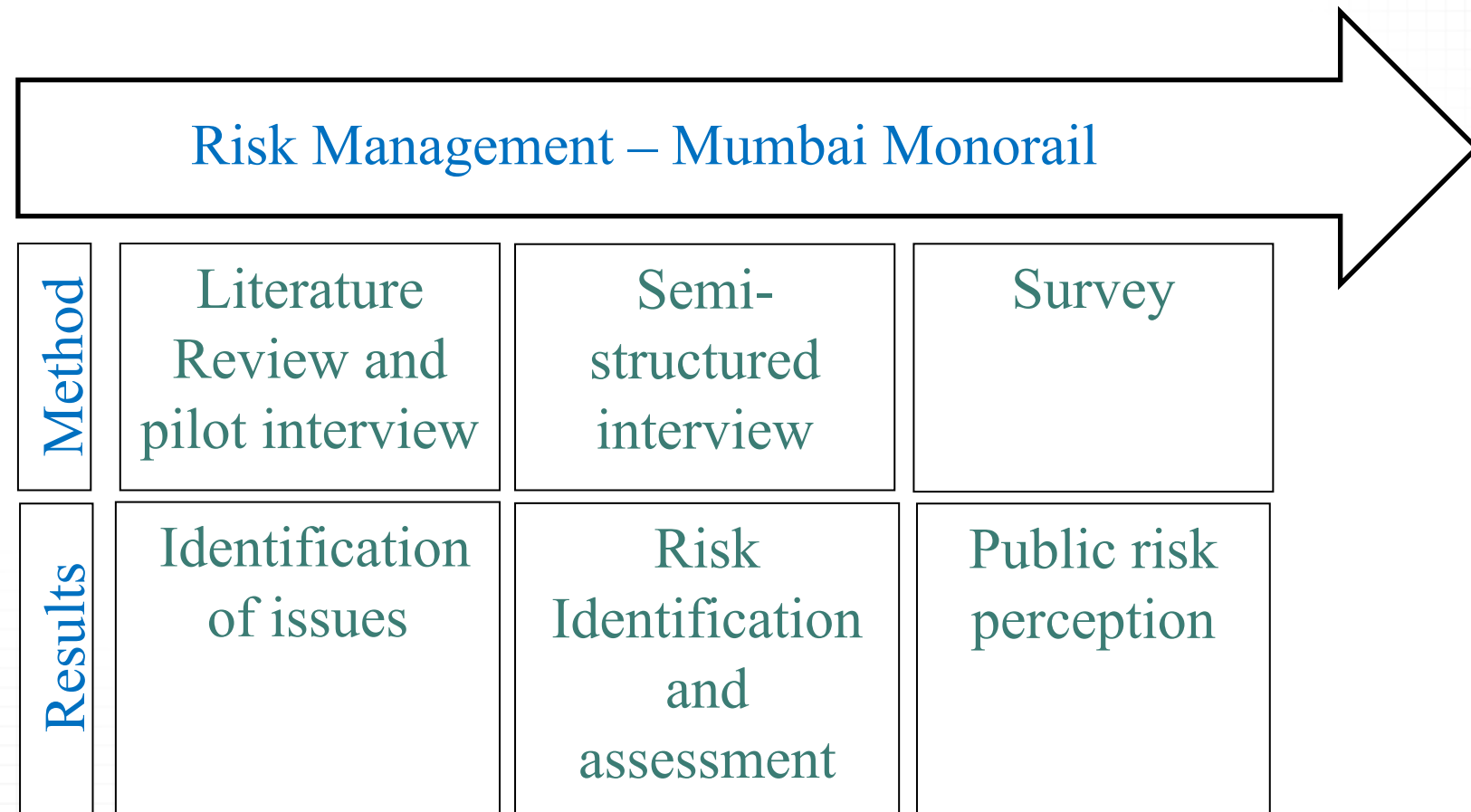


# Failures of Mumbai Monorail

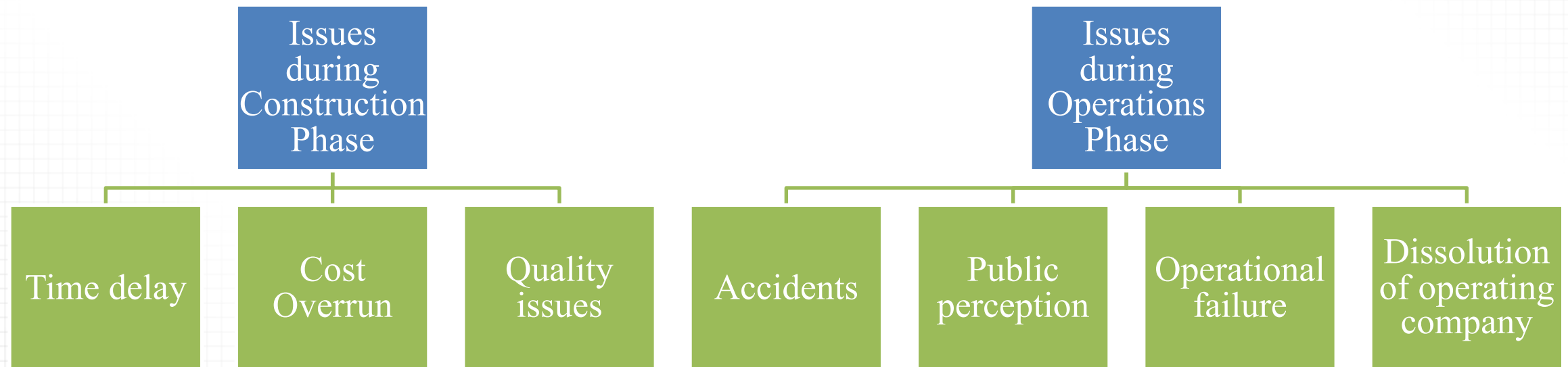
- Cost overrun – Rs. 2.36 billion (Around \$30 million)
- Time delay – Phase I – 3 years  
– Phase II – 5 years
- Technical snags during operations
- Fire incidents during operations
- High operating cost/ Lack of sustainable revenue model



# Methodology



# Issues with Mumbai Monorail Project





# Identification of Risks

Constructi  
on Risks

Operation  
al Risk

# Construction Risk

Issues in design

Project Scope not clear

Delays in land acquisition

Delay in Permission/approvals

Material productivity

Frequent variations/change orders

Labour strikes & dispute issues

Accident During the construction

Delays due to weather conditions

Negligence of contractor

Inefficiency of client

Delays in Payments

Consultant & Supplier delays

Quality of work done

Inadequate Cashflow



# Operational Risks

Inadequate  
Ridership

Risk of accidents

Lack of fire  
safety

No Emergency  
evacuation  
system/ plan

Operator  
bankrupted

Lack of  
interconnection  
with other  
systems

Lack of last mile  
connectivity

Inaccessible  
stations

High operating  
cost

Public perception

# Conclusion

- The Mumbai Monorail failed to meet its strategic objective of being a feeder system to existing system.
- Series of accidents and mishaps.
- Service stopped for a year due to glitches
- Government audit committee declared the project as a waste of public money.

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