



Showing delay analysis and the management of claims to client

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Introduction

Most general problems in modern construction projects are delays which have a financial impacts. The solution is to use delay analysis techniques (DATs). Both contractors and their employers can claim for these impacts. Delay claims can be successfully managed with a good agreement and strong management of claims.

Delay Analysis

Delay analysis is the review of what caused the project to be delayed and who is responsible for it. There are three steps for doing the delay analysis.

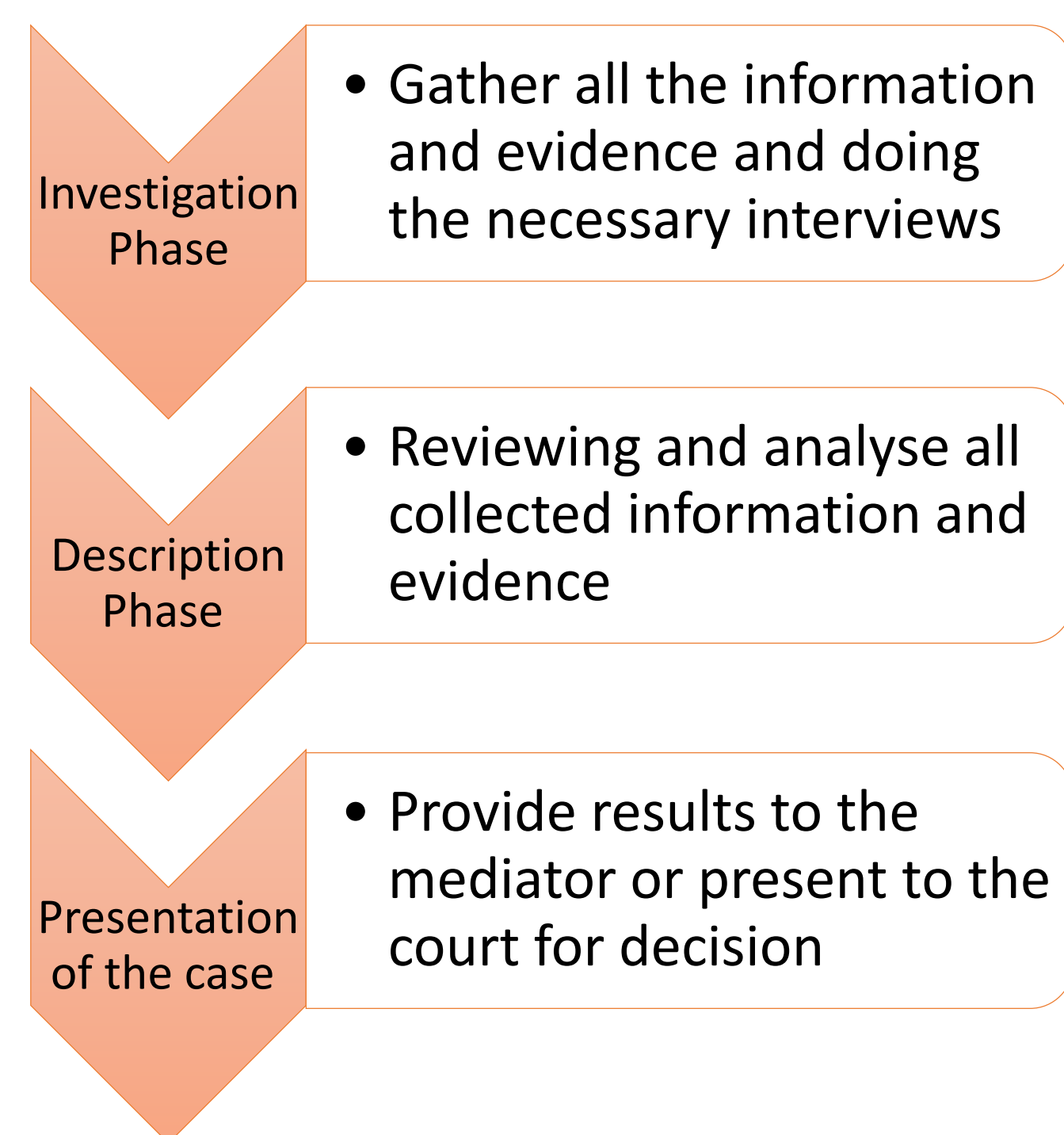


Figure 1 :Steps of delay analysis

Categories of Delays

Delays are classified into 4 groups based on their origin:

- **Excusable compensable (E/C):** (by the owner)
- **Excusable non-compensable (E/N):** (neither the contractor's nor the owner's fault)
- **Non-excusable delays (N/N):** (caused by the contractor or its subcontractor)
- **Concurrent** (delay caused by multiple factors)

Delay analysis techniques (DATs)

One of the best ways of managing the claims is to use the delay analysis techniques. There are different methods commonly used for it, such as figure 2.

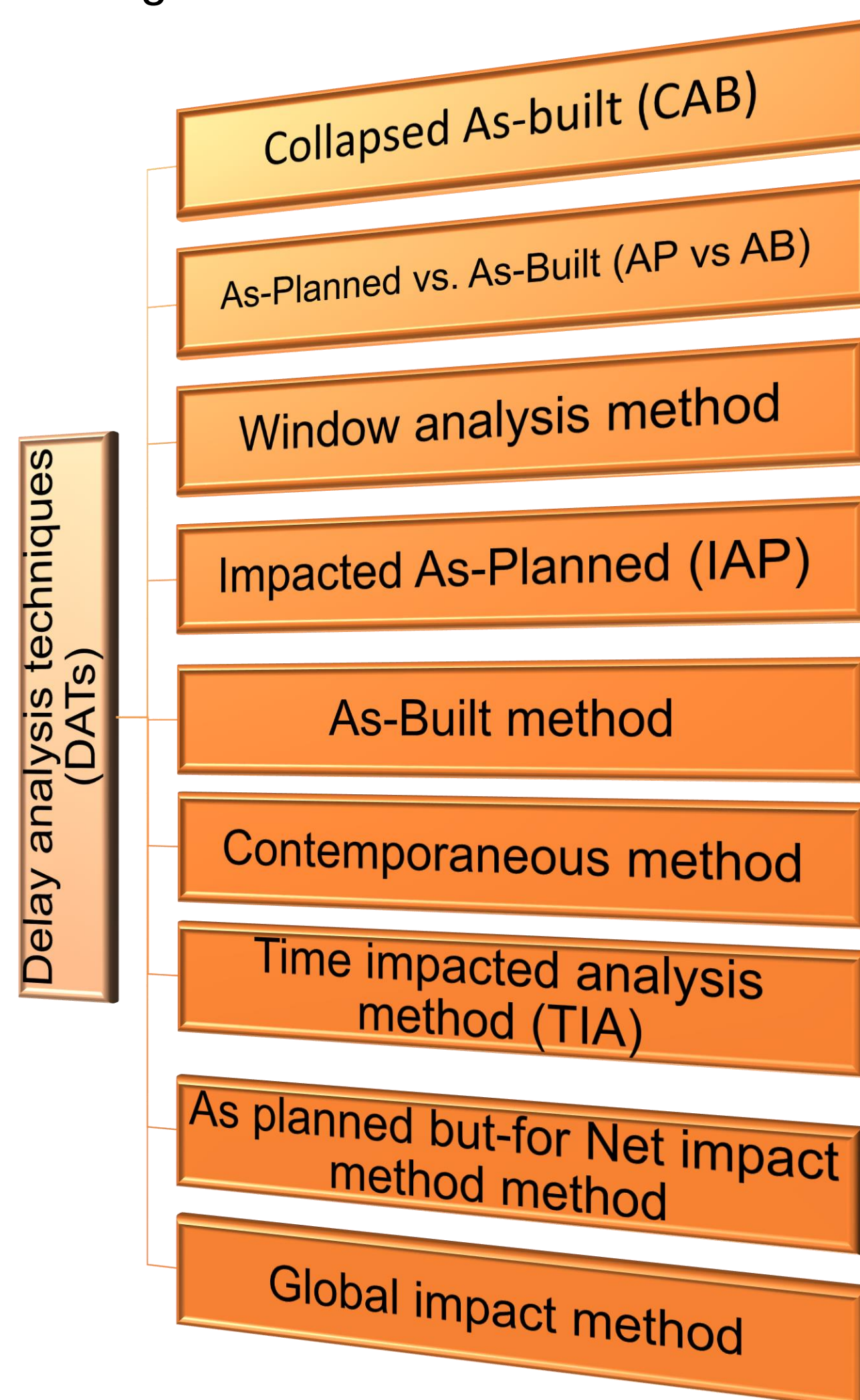


Figure 2 :Delay analysis techniques

Among the above methods, two methods 1 and 2 are less efficient because they ignore the reasons for the delay, so those can not determine who is responsible for it. Other methods are more popular due to consider the cause and effect of the delays, although they do not have the same efficiency.

Case study

The case study is a small pre-cast bridge in Boston, Massachusetts which the started at May 12, 2013 and planed finish date was November 4, 2013 with a project planned duration of 176 days, but because of delays at table 1 it was finish at November 19, 2013.

Table 1 : Type of delays at case study

Delay type	Delay time	responsibility
Utility conflicts	22	Owner (E/C)
Late approval	7	Owner (E/C)
Late delivery	5	contractor(N/N)
Unavailable equipment	5	contractor(N/N)
Weather conditions	3	excusable(E/N)
Crane position-owner disruption	2	owner(E/C)

The results of DATs for the case study has been brought in table 2. As can be seen, different methods have given different results. The reason for the difference in results is ignoring some parameters such as the sequence, delay responsibility and concurrency in the construction period.

Table 2 : The results of DATs for the case study

DAT	Time entitle ment	(E/C)	(N/N)	(E/N)
AP vs. AB	15	N/A	N/A	N/A
(IAP)	10	N/A	N/A	N/A
(CAB)	10	10	0	5 Weather+ concurrent
Global impact	10	10	0	5 Weather+ concurrent
(TIA)	12	12	0	3 (Weather)

References

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- Metropolitan engineering, consulting & forensics, (2020). Metropolitanforensics. [Online]. [12 May 2020]. Available from: <https://sites.google.com/site/metropolitanforensics/construction-delay-analysis-methods>

Explain how risk management and analysis can be used to improve a project

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Introduction

Due to the complexity and variety of the parties involved, construction projects are subject to inherent risks and potential damages. So the success of a project depends on the risks and how it is managed. In risk management, risks such as construction risks, socio-economic risks, environmental risks and financial risks associated with the project are studied, and the attempt is made to minimize their effects by managing them.

Risk management

Risk management is the method of recognising, analysing and controlling threats to a project. Steps of risk management are as below.



Figure1: Steps of risk management

Risk Identification

Risk Identification is the analytical process of determines which risks can affect the construction project. Risk Identification is concerning significant value as the process of response administration, because risk analysis may only be performed on identified possible risks, However, Should not spend too much time on it. There are five way for identifying the risks as figure 2.

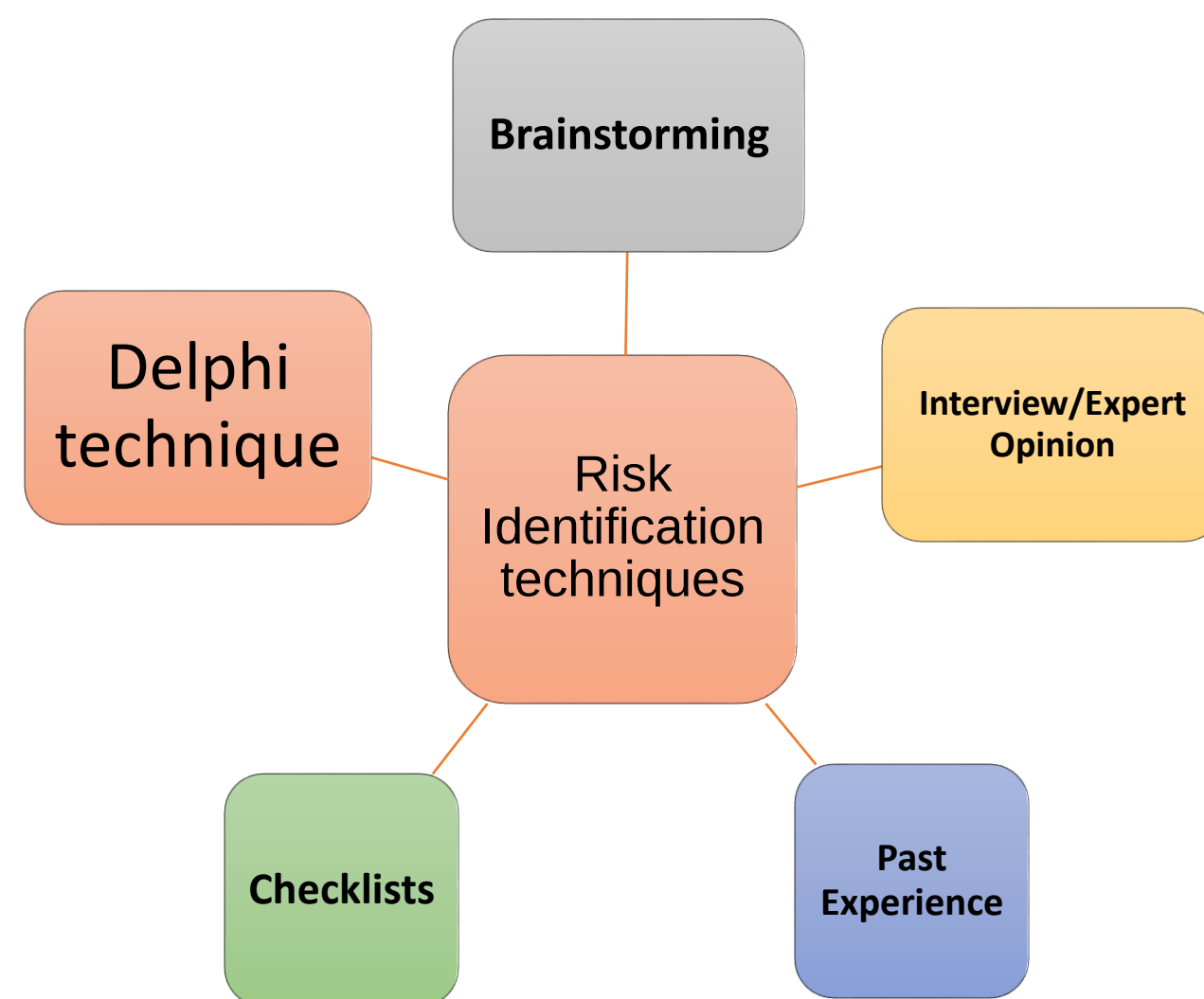


Figure2: Risk Identification techniques

Risk Assessment / Analysis

With the risk analysis methods, the available evidence is used to decrease the number of events and reduce the level of results in risk management. Many techniques are available for analysis (figure 3)

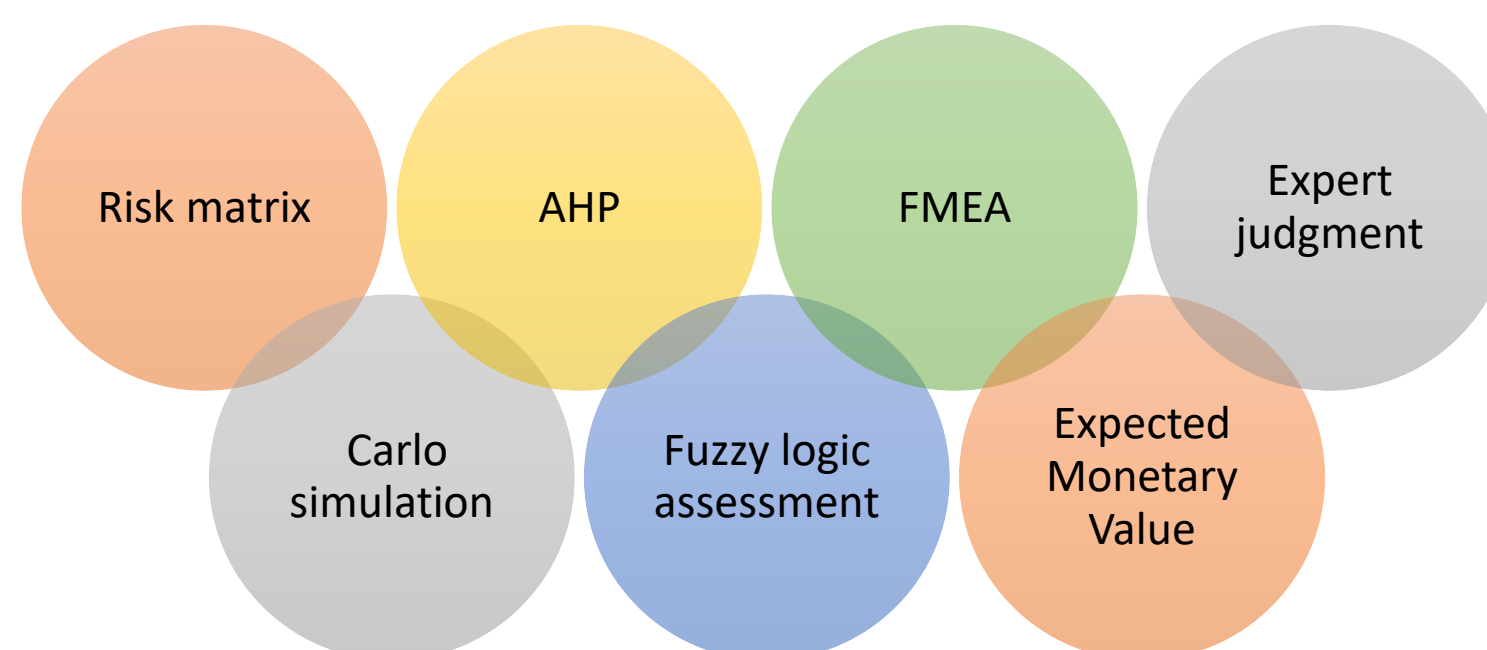


Figure3: Risk analysis methods

Risk Response

After analysing the risks, the treating of risks should be started by acceptable mitigation steps. These mitigation steps are identified in one of the groups in figure 4. This classification is according to the nature of risks and their consequences.

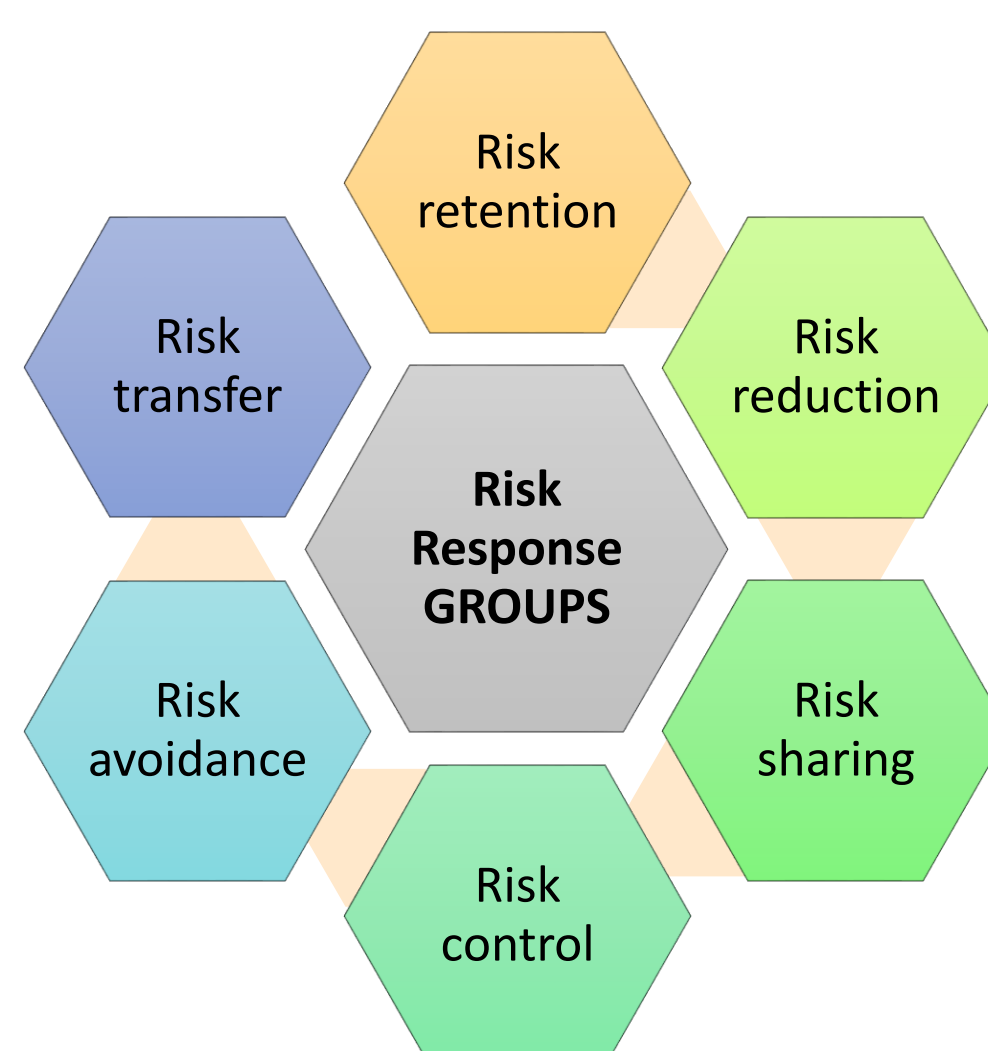


Figure4: Risk Response GROUPS

Impact of risk management for improving project

Risk management can reduce cost. It can protect the project from potential threats and decrease their impact. Risk management allows decisions to be made with confidence and making safe the work environment for the workers. It is improving the establishment of works while also minimising legal liability.

Case study

The case study is a small pre-cast bridge in Boston, Massachusetts which the started at May 12, 2013 and planed finish date was November 4, 2013 with a project planned duration of 176 days, but because of delays at table 1 it was finish at November 19, 2013. Based on the results of analysis, the risk response obtained is shown below:

Table 1: Risk responses of project

Risk response	Risk percentage (%)				
	Contractor	Owner	Society	Design consultant	Supervisory consultant
Risk acceptance	30	15.79	5.55	62.5	38.46
Risk mitigation	40	57.89	77.78	37.5	30.77
Risk avoidance	30	26.32	16.67	—	30.77

Based on the risk analysis, the biggest risk level on the contractor side is for legal, political and contractual risks. Also, the highest construction risks are on the owner side, while the biggest economic risks are on the contractor side.

Table 2: The top risk level of each stakeholders

Risk category	The top risk level				
	Contractor	Owner	Society	Design consultant	Supervisory consultant
Construction risks	15	20	15	8	18
Economic risks	15	12	7.5	8	3
Political, legal, and contractual risks	15	8	11.25	4	4

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