

Risk Management Professional



PMI-RMP PREPARATION COURSE

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/PMP TRICKS

Lec-4



Lecture 04 : Project Risk Management

04. PERFORM QUANTITATIVE RISK ANALYSIS



Numerically analyzing the effect of identified risks on overall project objectives.



It produces quantitative risk information to support decision making.

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04. PERFORM QUANTITATIVE RISK ANALYSIS



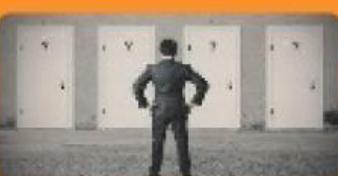
This process can be skipped if Risks doesn't require this approach



PM may not consider this process due to insufficient data to develop analysis models



There is no need to perform in depth Risk analysis for every project.

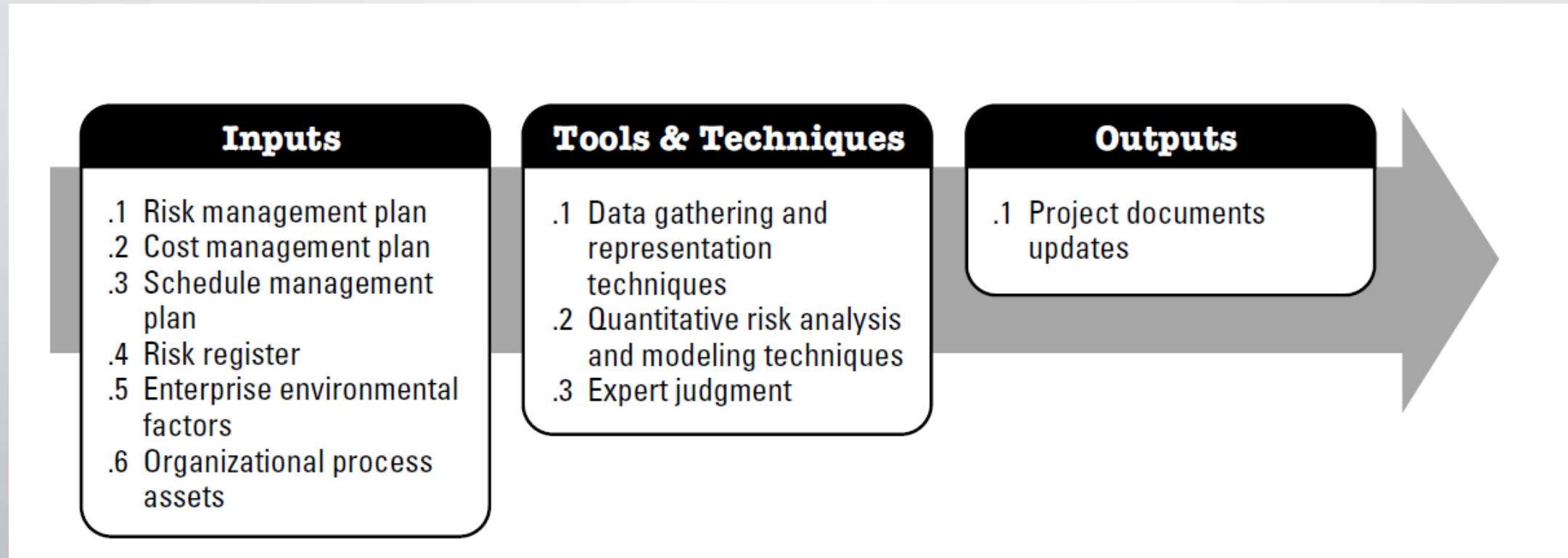


PM should exercise expert judgment to decide on the need.

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04. PERFORM QUANTITATIVE RISK ANALYSIS

Perform Quantitative Risk Analysis: Inputs, Tools & Techniques, and Outputs



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04. PERFORM QUANTITATIVE RISK ANALYSIS

Perform Quantitative Risk Analysis: Tools and Techniques

Data Gathering and Representation Techniques

1- Interviewing



Interviewing techniques draw on **experience** and **historical data** to quantify the probability and impact of risks on project objectives

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04. PERFORM QUANTITATIVE RISK ANALYSIS

Perform Quantitative Risk Analysis: Tools and Techniques

Data Gathering and Representation Techniques

2- Probability distributions.

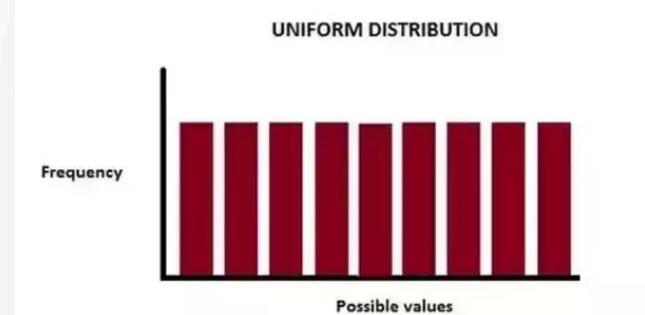


- Uniform distributions:
can be used if there **is no obvious value** that is more likely than any other between specified **high and low bounds**, such as in the **early concept stage of design**.



Q- You are a risk manager for your organization . During the Quantitative risk analysis, you suggested to use probability distribution used in early concept stage of design and where there are very little or no available data value that is more likely than any other between specified high and low bounds. What is the probability distribution which is suggested by the risk manager?

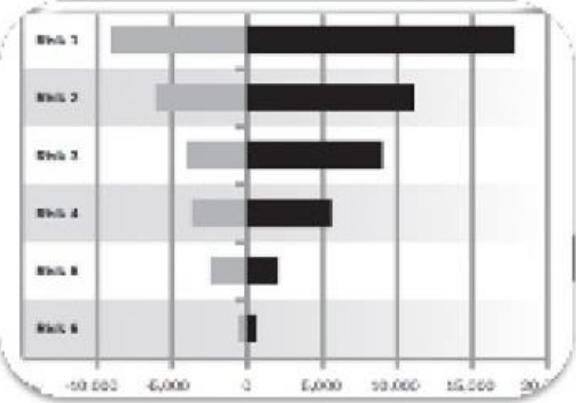
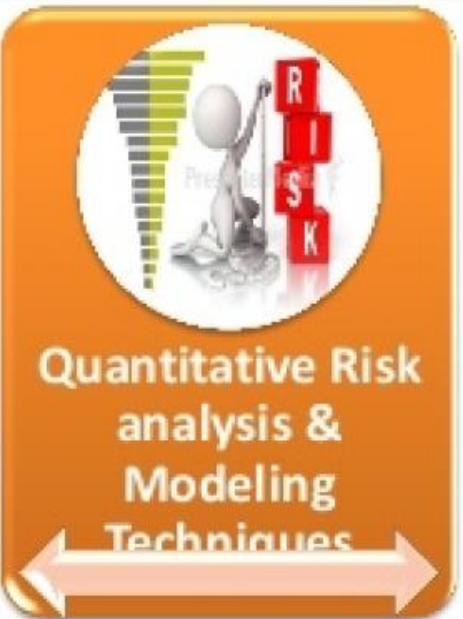
- A- Discrete distributions.
- B- Uniform distribution.
- C- Triangular Distribution.
- D- Beta distribution.



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04. PERFORM QUANTITATIVE RISK ANALYSIS

Perform Quantitative Risk Analysis: Tools and Techniques



Sensitivity analysis
(Tornado Diagram)



Expected monetary
value (EMV):

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04. PERFORM QUANTITATIVE RISK ANALYSIS

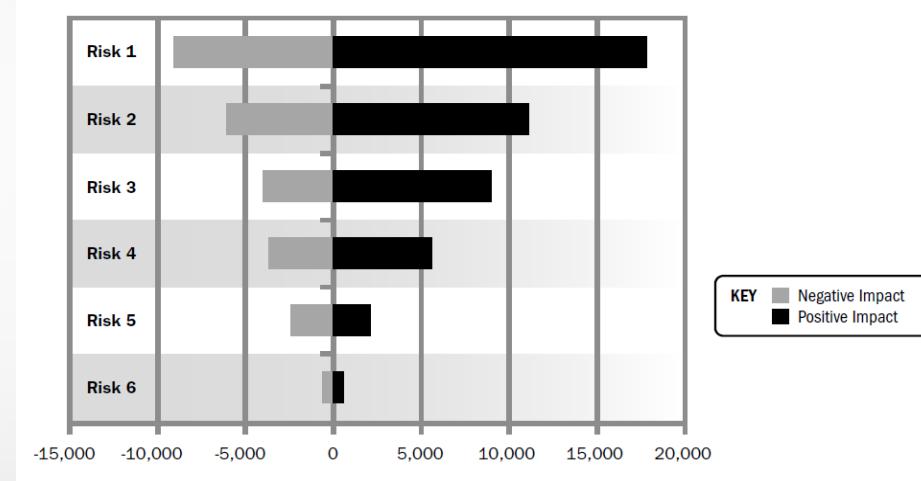
Perform Quantitative Risk Analysis: Tools and Techniques

Quantitative Risk Analysis and Modeling Techniques

1. Sensitivity analysis.



(Tornado diagram)



Helps to determine which risks have the **most potential impact** on the project.

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04. PERFORM QUANTITATIVE RISK ANALYSIS

Perform Quantitative Risk Analysis: Tools and Techniques

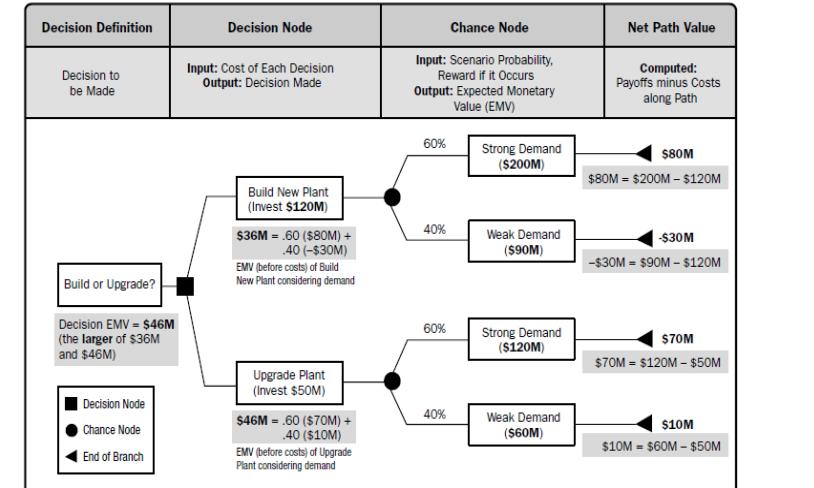
Quantitative Risk Analysis and Modeling Techniques

2. Expected monetary value analysis.

EMV common use is a decision tree analysis.

is a **statistical** concept that calculates the average outcome when the future includes scenarios that may or may not happen

EMV of **opportunities** are expressed as **positive** values, while **threats** are expressed as **negative** values



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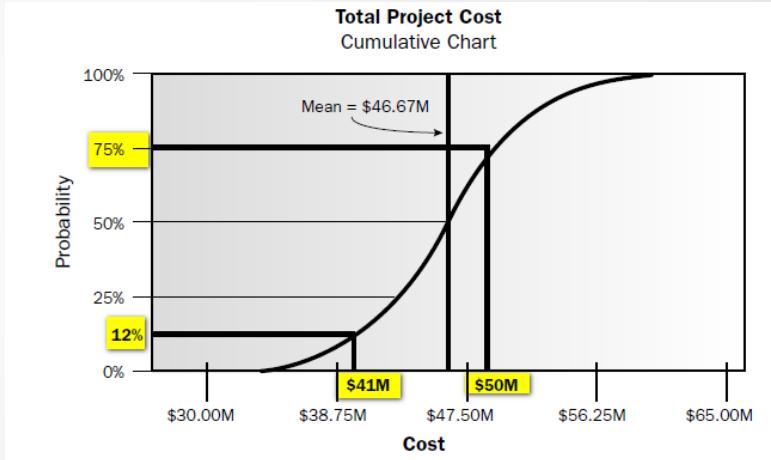
04. PERFORM QUANTITATIVE RISK ANALYSIS

Perform Quantitative Risk Analysis: Tools and Techniques

Quantitative Risk Analysis and Modeling Techniques

3. Modeling and simulation.

Simulations are typically performed using the Monte Carlo technique



A project simulation uses a model that translates the specified detailed uncertainties of the project into their potential impact on project objectives.

In a simulation the project model is computed many times (iterated), with the input values chosen at random for each iteration from the probability distributions of these variables.

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04. PERFORM QUANTITATIVE RISK ANALYSIS

**Practice_Standard_Project
_Risk_Management**

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04. PERFORM QUANTITATIVE RISK ANALYSIS

➤ Purpose and Objectives of the Quantitative Risk Analysis Process

- The Perform Quantitative Risk Analysis process provides a **numerical** estimate of the **overall effect** of risk on the objectives of the project.
- Evaluate the **likelihood** of success in **achieving** project objectives and to estimate **contingency reserves**.
- Quantitative risk analysis **is not always** required or appropriate for **all** projects.

Will answer important questions such as:



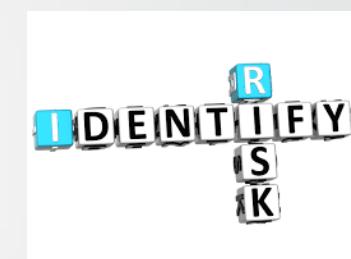
- What is the probability of meeting the project's objectives?
- How much contingency reserve (e.g., reserves or buffers of time, resources, and cost) is needed to provide the organization with the level of certainty it requires based upon its risk tolerance?

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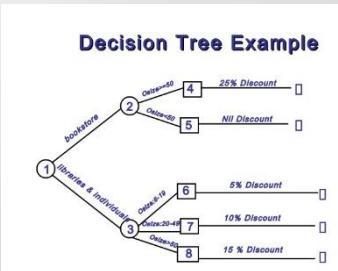
04. Perform Quantitative Risk Analysis

➤ Critical Success Factors for the Perform Quantitative Risk Analysis Process

1- Prior Risk Identification and Qualitative Risk Analysis.



2- Appropriate Project Model.



3- Commitment to Collecting High-Quality Risk Data.

High quality data

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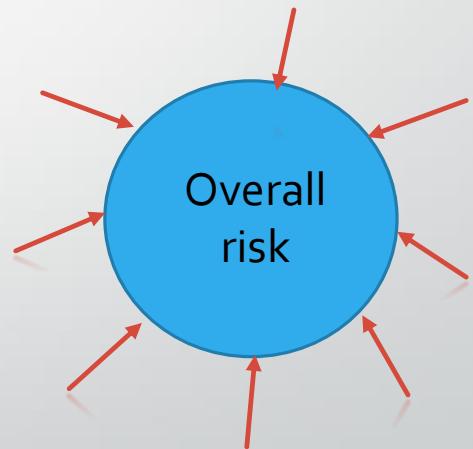
04. Perform Quantitative Risk Analysis

➤ Critical Success Factors for the Perform Quantitative Risk Analysis Process

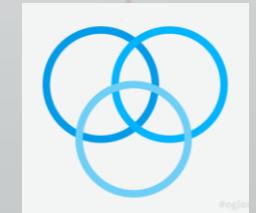
4- Unbiased Data.



5- Overall Project Risk Derived from Individual Risks.



6- Interrelationships Between Risks in Quantitative Risk Analysis.



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04. Perform Quantitative Risk Analysis

➤ Tools and Techniques for the Perform Quantitative Risk Analysis

- Documenting the Results of the Perform Quantitative Risk Analysis Process

- Contingency reserves may also be established to provide for the capture of opportunities that Are judged to be priorities for the project



- Q- Which of the following used for capture of opportunities ?
- A- Contingency reserves .
 - B- Management reserves .
 - C- SWOT.
 - D- Monte Carlo.



Standard Risk no.42

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04. Perform Quantitative Risk Analysis

➤ VERY IMPORTANT QUESTIONS



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04. Perform Quantitative Risk Analysis

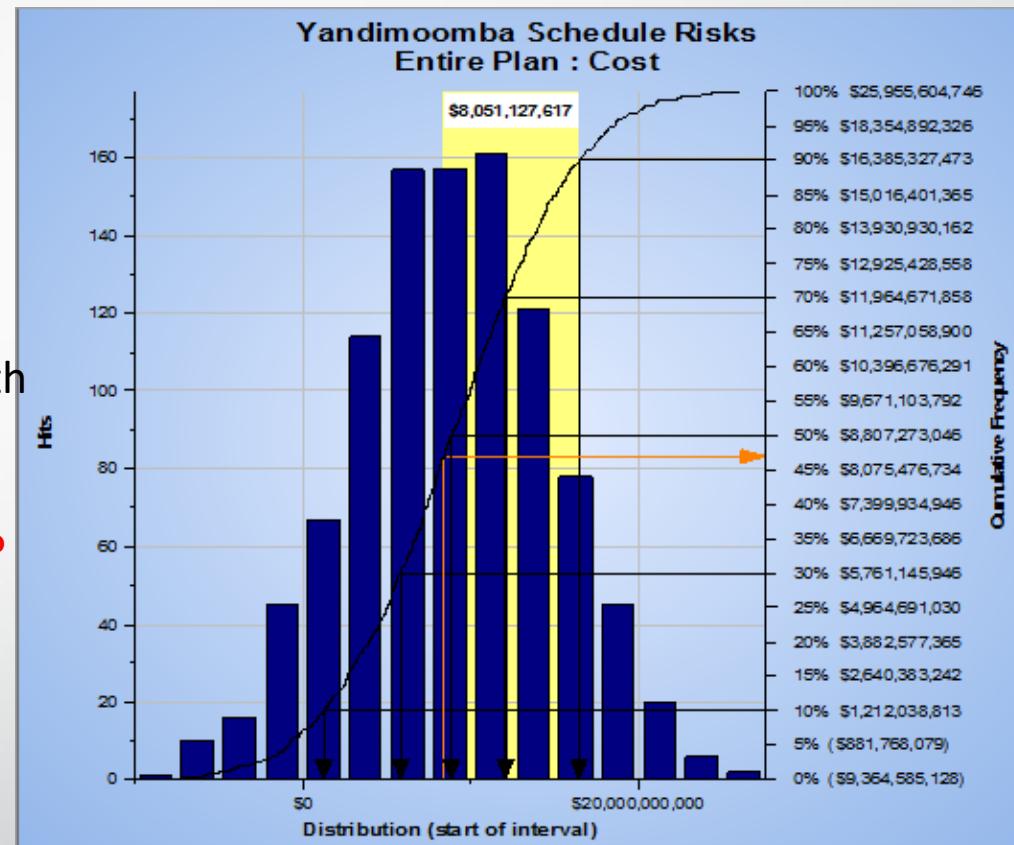
➤ Very important questions



Q1- You are a project manager working in important project with special customer ,Total Budget of project 15,016,401.365\$.
Based on Monte Carlo Sampling technique.
- What is the probability to complete the project within budget?



= 85 %



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04. Perform Quantitative Risk Analysis

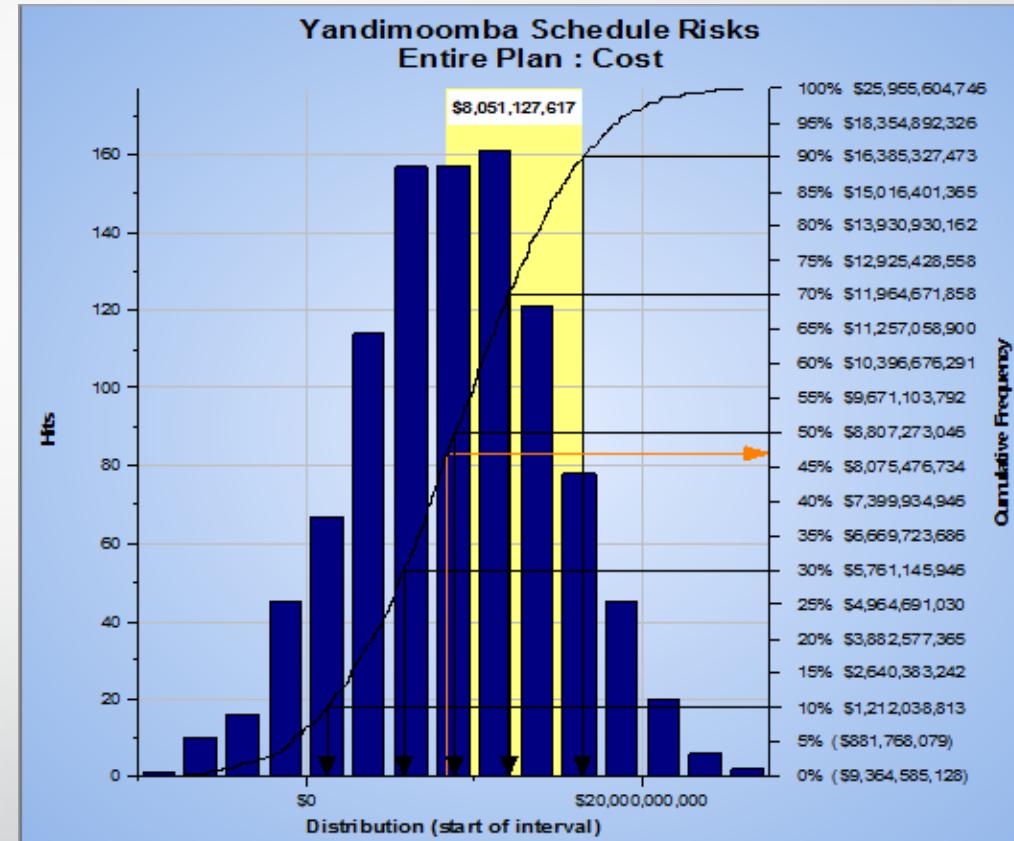
➤ Very important questions



Q2- You are a project manager working in important project with special customer ,Total Budget of project 15,016,401.365\$.
Based on Monte Carlo Sampling technique.
- What is the average cost to complete the project?.



= 8,807,273.045



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04. Perform Quantitative Risk Analysis

➤ Very important questions

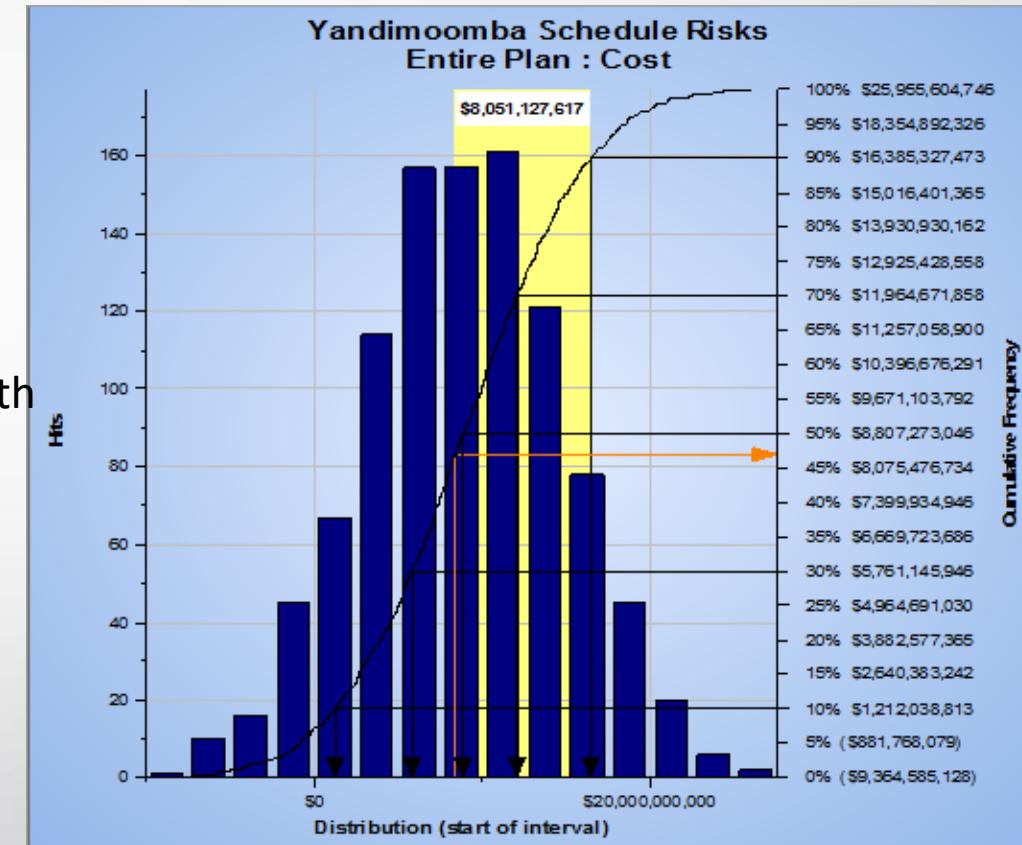


Q3- You are a project manager working in important project with special customer ,Total Budget of project 15,016,401.365\$.
Based on Mote Carlo Sampling technique.

- What is the probability to complete the project with budget 16,385,327.473 ?



= 90 %



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04. Perform Quantitative Risk Analysis

➤ Very important questions

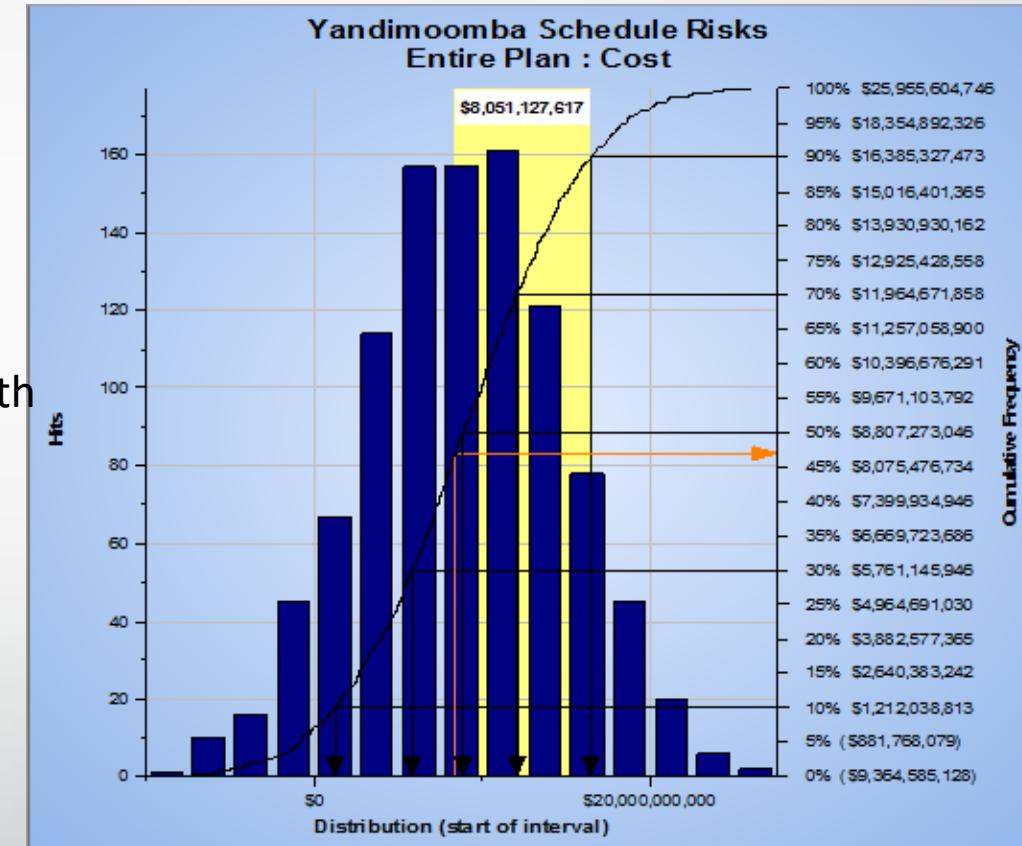


Q4- You are a project manager working in important project with special customer ,Total Budget of project 15,016,401.365\$.
Based on Monte Carlo Sampling technique.

- What is the budget if the confidence level is 60%?.?



$$\begin{aligned} &= 15,016,401.365 - 10,396,675.291 \\ &= 4,619,726.074 \end{aligned}$$



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04. Perform Quantitative Risk Analysis

➤ Very important questions

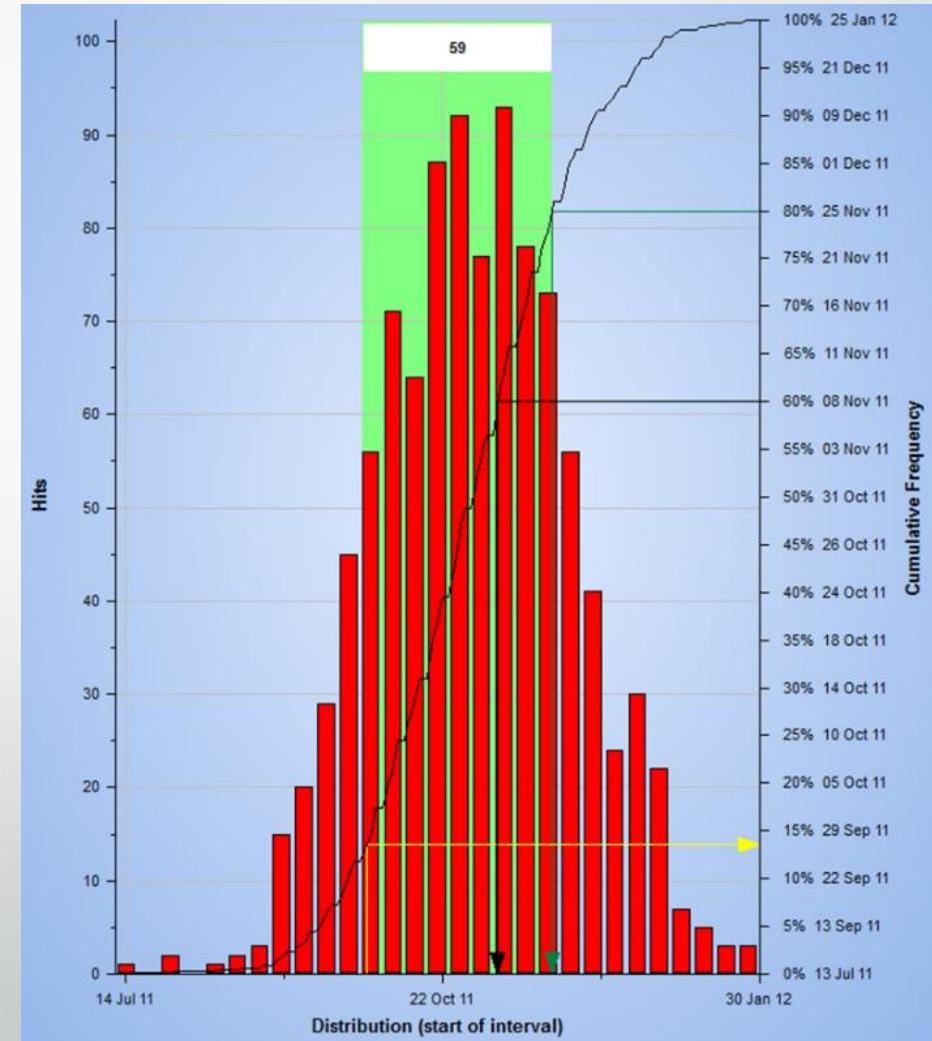


Q5- You are a project manager working in important project with special customer , the project with completion date 08 /Nov/2011
Based on Monte Carlo Sampling technique.

- What is the probability to complete the project within plan?



= 60 %



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04. Perform Quantitative Risk Analysis

➤ Very important questions

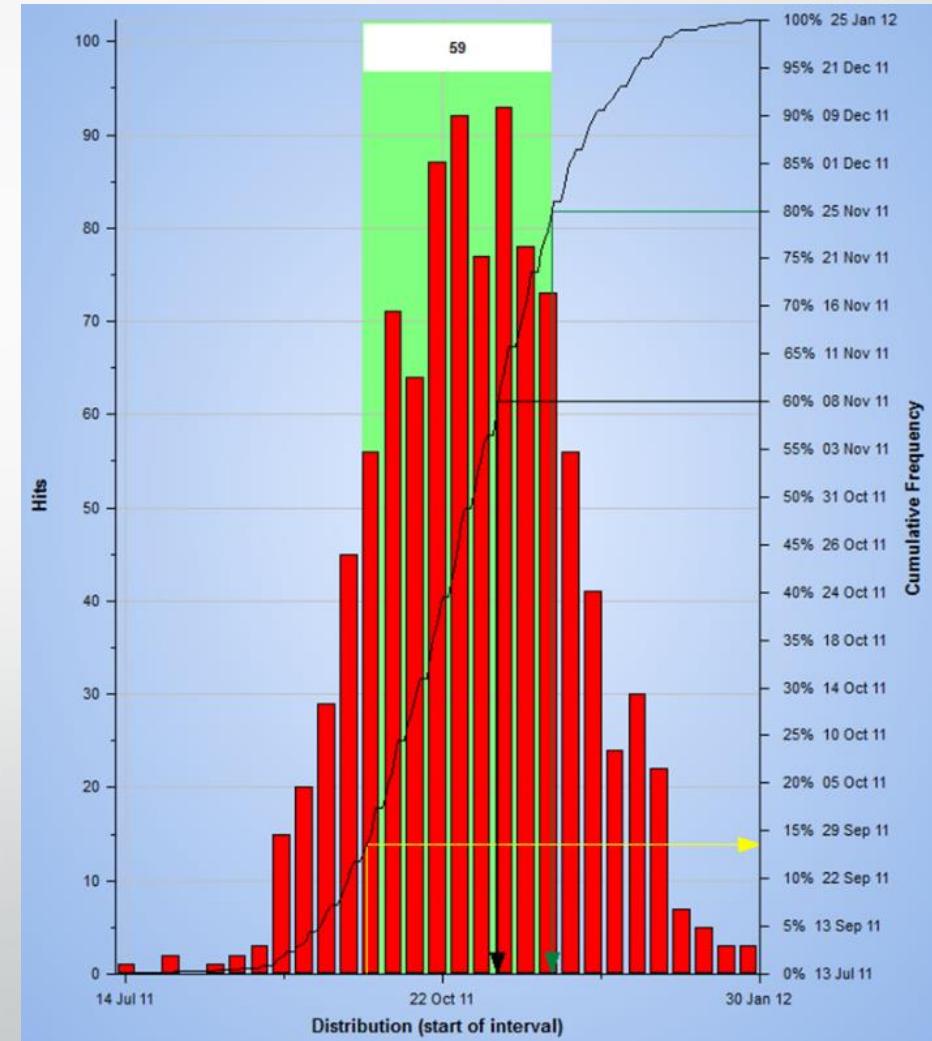


Q6- You are a project manager working in important project with special customer , the project with completion date 08/Nov/2011
Based on Monte Carlo Sampling technique.

- What is the contingency if the confidence level 90%?



$$= 9 \text{ DEC} - 8 \text{ NOV} = 31$$



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04. Perform Quantitative Risk Analysis

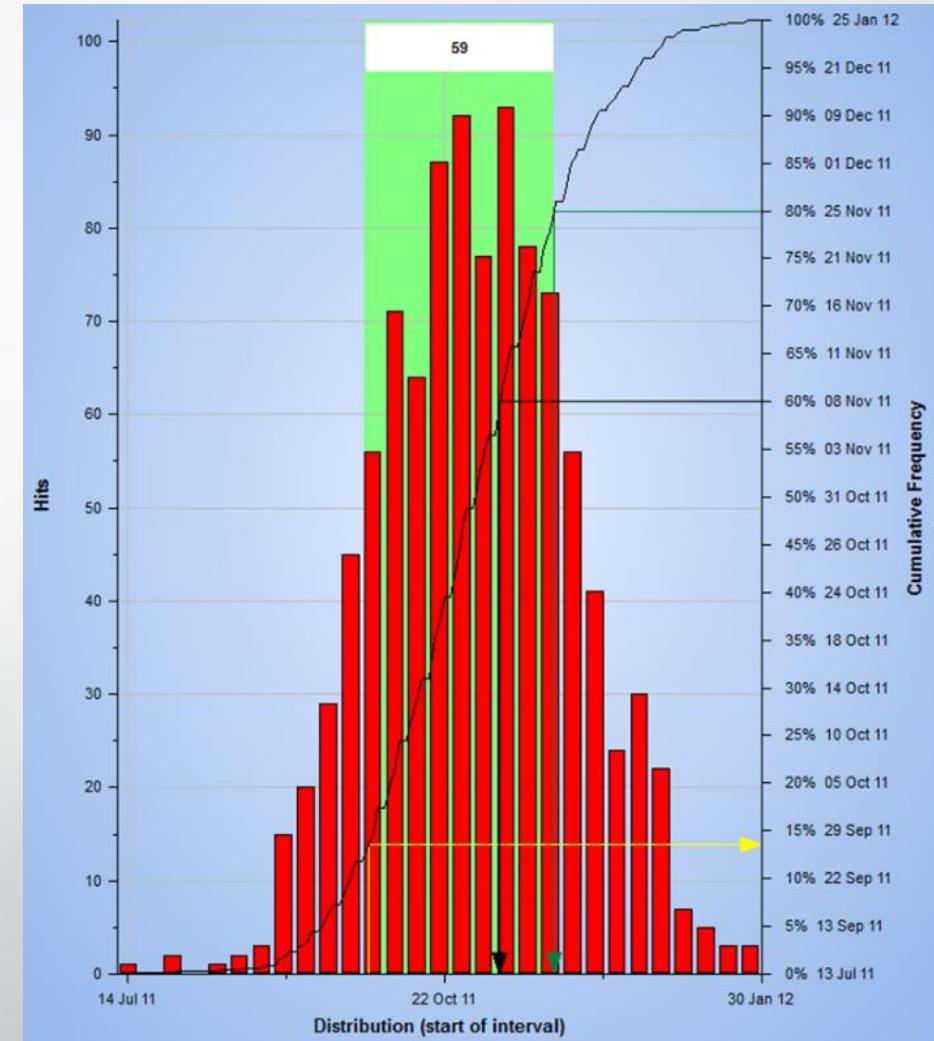
➤ Very important questions



Q7- You are a project manager working in important project with special customer , the project with completion date 25/Nov/2011 Based on Monte Carlo Sampling technique.
- what is the average date to complete the project?



= 31 OCT-2011



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04. Perform Quantitative Risk Analysis

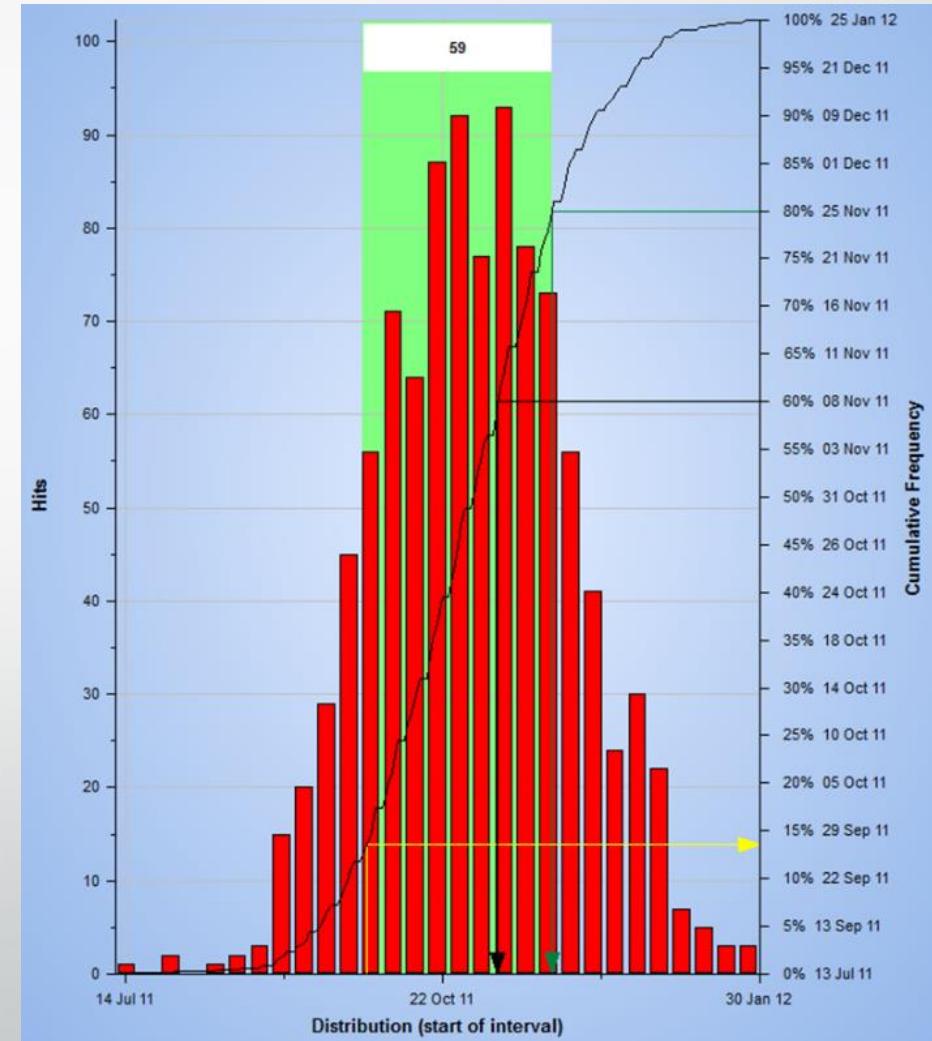
➤ Very important questions



Q8- You are a project manager working in important project with special customer , the project with completion date 25/Nov/2011
Based on Monte Carlo Sampling technique.
- what is the probability to complete the project by 21/ Nov /11?



= 75 %



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04. Perform Quantitative Risk Analysis

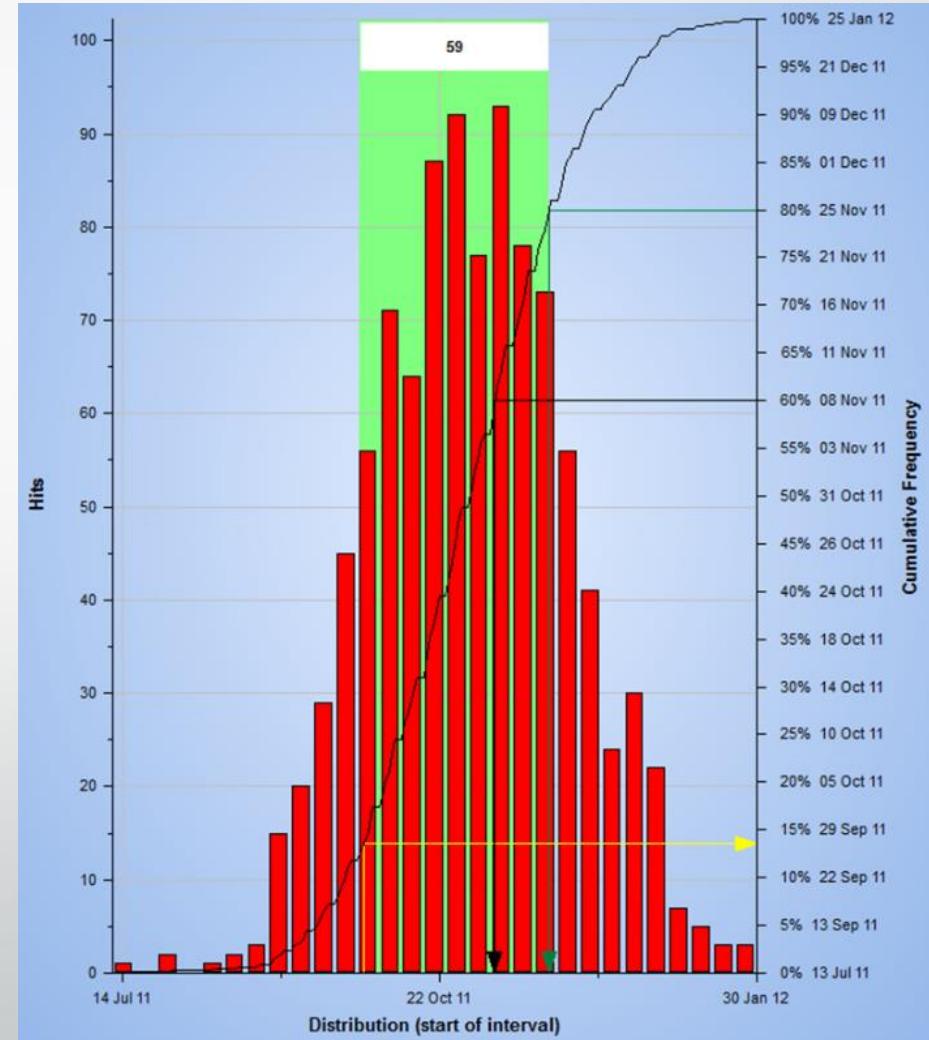
➤ Very important questions



Q9- You are a project manager working in important project with special customer , the project with completion date 25/Nov/2011
Based on Monte Carlo Sampling technique.

- what is the probability to complete the project by 18 / Nov /11?

- A- 90
- B- 80
- C- 65
- D- 73



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q10- You work as a project manager for new Project. You and your team calculating the contingency reserve for the project. What is the contingency reserve of your project as per the following Risks in the below table if the probability of R1 becomes 50%?.

Risk	probability	Impact	C.R
R1	0.4	80,000	32,000
R2	0.7	65000	45,500
R3	0.6	50,000	30,000
R4	0.8	40,000	32,000
			139,500

- A) 123,500
- B) 150,500
- C) 125,000
- D) -125,000



$$\text{contingency reserve} = 139,500 - .05 * 32000 = 123,500$$

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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q11- Which one of the following is an input to Quantitative risk analysis process ?

- A- Organizational process assets.
- B- Reserve analysis.
- C- Project charter.
- D- SH Register.



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q12) You work as the project manager for Bluewell Inc. Your project has several risks that will affect several stakeholder requirements. Which project management plan will define who will be Available to share information on the project risks?

- A. Risk Management Plan
- B. Stakeholder management strategy
- C. Resource Management Plan
- D. Communications Management Plan



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q13) You are working with Anna on your project to determine and map the probability distributions of risk within the project. You have indicated that you will use the uniform distribution method for a portion of the project. Which part of your project is most likely to have a uniform risk distribution?

- A. Late completion stages of a project**
- B. Project phases that deal with "cutover" technologies**
- C. Early concept stage of design**
- D. Project initiating**



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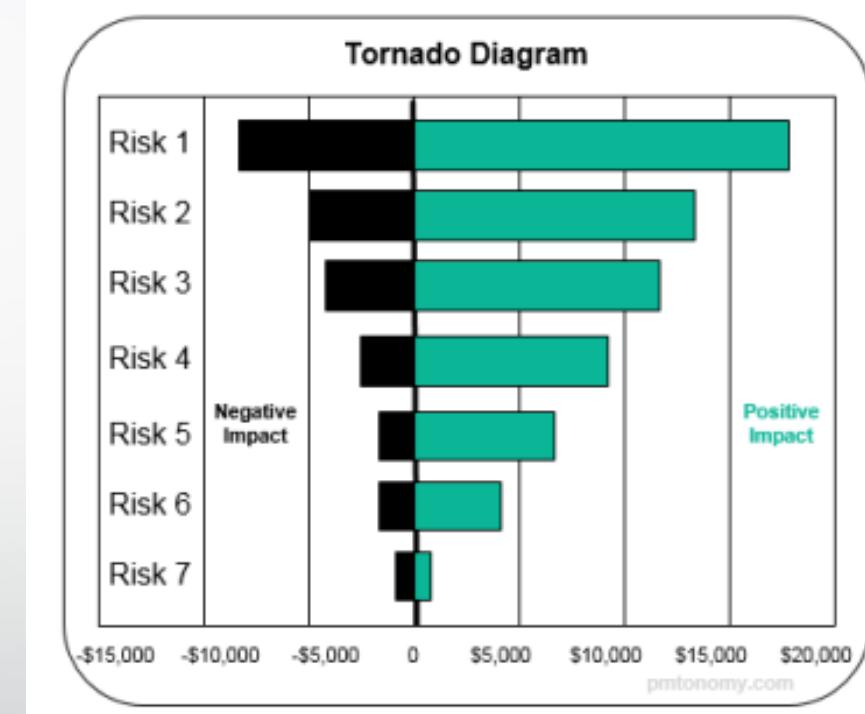
04. Perform Quantitative Risk Analysis

➤ Very important questions



Q13) You are a project manager in big construction Project, now you, your team and SME working together in quantitative risk analysis process. Based on the below table, what are the risks that have the most potential impact on the project and need to special focus?

- A. Risk 1 and Risk 2
- B. Risk 3 and Risk 4
- C. Risk 6 and Risk 7
- D. Risk 1 and Risk 5



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q14) You are the project manager of the AMD project for your organization. In this project, you are currently performing quantitative risk analysis. The tool and technique you are using is simulation where the project model is computed many times with the input values chosen at random for each iteration. The goal is to create a probability distribution from the iterations for the project schedule. What technique will you use with this simulation?

- A. Pareto modelling**
- B. Expected Monetary Value**
- C. Analogous modelling**
- D. Monte Carlo Technique**



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q15) The objective of the Perform Quantitative Risk Analysis is to:

- A- Implement individual risk analysis identified through qualitative risk analysis.
- B- Calculate the overall estimate of cost in the case of small projects.
- C- Provide numeric estimation of the overall effect of risks on the project objectives based on current plans and information.
- D- Address the overall risks descriptively and add to risk register



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q16) Which of the following is NOT a Critical Success Factors for Perform Quantitative Risk Analysis Process?

- A- Commitment to Collecting High-Quality Risk Data
- B- Unbiased Data
- C- Individual Risks
- D- Prior Risk Identification and Quantitative Risk Analysis



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q17) Which of the following used for capture of opportunities?

- A- Contingency reserves.**
- B- Management reserves.**
- C- SWOT.**
- D- Monte Carlo.**



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04. Perform Quantitative Risk Analysis

➤ Very important questions



Q18) What kind of probability distribution curve has only minimum and maximum values?

- A- Beta
- B- Triangular
- C- Uniform
- D- Traditional



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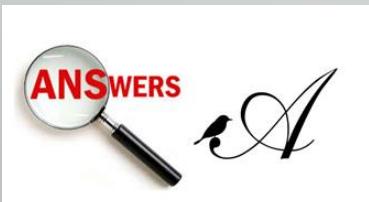
04. Perform Quantitative Risk Analysis

➤ Very important questions



Q19) Project X has a 60% Probability of success with an impact of \$50,000 and has a 40% chance of failure with an impact of \$-20,000. What is the Expected Monetary Value of this Project?

- A- 22,000
- B- 20,000
- C-21,000
- D-23000



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