Decision Analysis for Operation and Maintenance Professionals

Malé (Maldives)

24 - 28 August 2026

Decision Analysis for Operation and Maintenance Professionals

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Introduction

This comprehensive Decision Analysis course explores lean thinking and techniques for decision-making with an emphasis on responsiveness to customer requirements. Decision analysis is a critical human activity that we perform both consciously and unconsciously. It is vital for survival and success in every professional field. In business, decision-making isn't just about selecting the best alternative; it often involves prioritizing alternatives for resource allocation, examining the impact of changes, and determining the optimal course of action.

Throughout this program, we will dive into decision analysis techniques that aid in effective decision-making, particularly in maintenance and operational contexts. By applying these methods, participants can enhance operational efficiency and optimize maintenance decision-making processes.

Course Objectives

- Improve productivity by utilizing better and more timely information to support decision-making.
- Understand how world-class organizations solve common asset management problems through advanced decision analysis methods.
- Optimize planning and scheduling of resources, ensuring effective utilization and minimal downtime.
- Carry out optimized failure analyses to mitigate risks and enhance system reliability.
- Develop practical action plans to integrate decision analysis into maintenance strategies, measuring outcomes, and realizing long-term benefits.
- Master advanced decision analysis techniques and apply them to improve maintenance optimization efforts within your organization.

Course Outlines

Day 1: Introduction to Decision Making

- Scope and significance of decisions: Understanding the role of decisions in driving operational success.
- The decision-making process: Key steps in making informed decisions.
- Choosing between options by projecting likely outcomes.
- Decision tree analysis: Models for low-probability, high-consequence events; valuing additional information and control.
- Monte Carlo simulation: A technique for optimization with advantages and limitations.
- Implementing multiple criteria decision analysis MCDA: Approaches for evaluating different alternatives.
- Definition of decision analysis: What is decision analysis and why is it crucial?
- Common problems with traditional decision-making methods.
- Guidelines for good decision analysis to ensure better outcomes.

Day 2: The Analytic Hierarchy Process AHP

- Introduction to AHP Analytic Hierarchy Process: A structured technique for organizing and analyzing

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complex decisions.

- The comparative matrix: A key component in the AHP methodology.
- Consistency analysis: Ensuring reliable and consistent decision-making.
- Sensitivity analysis: Assessing the robustness of your decisions.
- Benefit/cost analysis: Balancing the costs and benefits of different options.
- Applications of AHP: Real-life cases like the Concorde project and maintenance strategies.
- Risk management through Failure Mode & Effect Analysis FMEA: Identifying potential failures and their consequences.
- Fault tree analysis: A method for analyzing risks.
- Risk priority number: Ranking risks based on their likelihood and impact.

Day 3: MRP and ERP Systems

- What is ERP and its evolution: A system that integrates core business processes.
- What is MRP Material Requirements Planning and how it relates to ERP.
- MRPII System: Extending MRP to include more comprehensive planning.
- Scope of decisions: Making better decisions through ERP systems.
- Optimum performance measure: How to measure and achieve peak performance using MRP and ERP.
- Challenges of performance measures in operational efficiency.
- Performance measures as a continuous improvement process: Ensuring ongoing improvement.
- Desirable features in maintenance performance measures: Identifying key metrics.

Day 4: The Overall Equipment Effectiveness as a Source of Best Practice in Maintenance

- Advantages of OEE Overall Equipment Effectiveness as an improvement program.
- Lean maintenance through OEE: Reducing waste and improving efficiency.
- Analysis of the six big losses: Identifying areas where OEE can be optimized.
- The House of Quality: Converting customer needs into engineering solutions for better design.

Day 5: Decision Analysis for Optimization of Maintenance Activities

- How to get the most of your CMMS Computerized Maintenance Management Systems: Streamlining maintenance management through technology.
- Benefits from CMMS: How to maximize the effectiveness of your CMMS system.
- Optimizing maintenance policies through effective decision analysis.
- Identifying unmet needs in responsive maintenance and addressing them.
- Key features of next-generation maintenance systems.
- How to transform data into decisions: Utilizing data analytics to make informed decisions and drive performance.

Why Attend this Course: Wins & Losses!

- In-depth knowledge of decision analysis methods and their applications, ensuring you make smarter decisions in every phase of your operations.
- A solid understanding of maintenance optimization strategies that will help reduce downtime, improve asset management, and enhance the efficiency of your maintenance processes.
- Practical skills in utilizing Monte Carlo simulation, AHP, decision trees, and other techniques to support effective maintenance decision-making.
- Ability to use ERP and MRP systems to streamline operations and ensure optimal resource allocation.

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- A comprehensive grasp of failure analysis techniques such as FMEA and fault tree analysis, which are essential for reducing risk and enhancing system reliability.

Conclusion

By the end of the Decision Analysis and Maintenance Optimization Course, you will have gained the expertise to make better, more informed decisions in every area of maintenance management. With a thorough understanding of decision analysis techniques, such as Monte Carlo simulation, AHP, and FMEA, you will be equipped to optimize maintenance activities and improve operational efficiency.

This course is designed for professionals who want to enhance their decision-making skills and transform data into actionable decisions, leading to improved outcomes in maintenance and overall asset management. Don't miss the opportunity to enhance your career and your organization's performance with this advanced decision analysis training.

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