

Risk Assessment Using FMEA: Unleashing the Power of Failure Modes and Effects Analysis

Note: These are examples only. Your organization/team will identify your own failure modes.

| Steps in the Process | Failure Mode (What could go wrong?) | Failure Causes (Why would the failure happen?) | Failure Effects (What would be the consequences of each failure?) | Likelihood of Occurrence (On a scale of 1-10, with 10 being the most likely, what is the likelihood the failure mode will occur?) | Likelihood of Detection (On a scale of 1-10, with 10 being the most likely NOT to be detected, what is the likelihood the failure will NOT be detected if it does occur?) | Severity (On a scale of 1-10, with 10 being the most likely, what is the likelihood that the failure mode, if it does occur, will cause severe harm?) | Risk Profile Number (RPN) (likelihood of occurrence x likelihood of detection x severity) | Actions to Reduce Occurrence of Failure |
|---|--|--|--|---|---|---|---|--|
| Triage patient to determine if they should be seen in person or virtually | Delays in treatment for an issue that should have been seen in person | All patients are encouraged to be seen virtually first | Patient deteriorates, harm occurs | 4 | 5 | 8 | 160 | Develop clinical guidelines and standards around virtual care. Request that patients complete a questionnaire about symptoms prior to being allowed to schedule a virtual visit. |
| Patient Health Screening | Missed opportunities to identify needs and provide services not related to the presenting complaint | Patient does not interact with multiple care team members to capture a fuller picture of the patient's health. | Patient has missed underlying health concerns | 6 | 6 | 7 | 252 | Develop a checklist to remind the clinician about critical elements such as preventive screening, med rec, and to identify and address problems other than the presenting complaint. |
| Access to patient's health records | Missed opportunity for preventive screening, med rec, or to address problems other than the presenting complaint | Lack of interoperability of electronic health records | Errors may result because of not having full patient medical records, history, medication list, and documentation from prior health care encounters. | 4 | 4 | 7 | 112 | Prepare to ask questions about other treatment. Encourage patients to come to the virtual visits with a medication list. |

In a world driven by uncertainty and risks, organizations strive to find effective methods to assess and mitigate potential failures that could hinder their success. Failure Modes and Effects Analysis (FMEA) has emerged as a renowned risk assessment technique that enables businesses to proactively identify and address vulnerabilities within their processes, products, or services.

Understanding FMEA

FMEA, originally developed in the 1940s by the aerospace industry, is a systematic approach to identify and prioritize potential failure modes and their

corresponding effects. It involves a multidisciplinary team, consisting of experts from various domains, coming together to analyze the different components of a system or process and assess the risks associated with each potential failure mode.



Risk Assessment Using FMEA: A Case of Reliable Improvement

by Mohammed Hamed Ahmed Soliman (Kindle Edition)

★★★★☆ 4.5 out of 5

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At its core, FMEA aims to enhance decision-making by providing organizations with a comprehensive understanding of the risks involved. Through its structured evaluation process, FMEA helps uncover failure modes, determine their severity, identify causes, evaluate existing controls, and recommend corrective actions. Organizations can then allocate resources effectively, minimize potential risks, and implement preventive measures to prevent failures from occurring.

The FMEA Process

The FMEA process encompasses several key steps, each crucial in ensuring a thorough risk assessment:

1. **Define the scope:** Clearly define the boundaries and objectives of the analysis to focus efforts and resources on the most critical areas.
2. **Assemble a team:** Bring together a diverse team of subject matter experts who can offer unique insights and expertise in examining the system or process under analysis.
3. **Identify failure modes:** List all potential failure modes, considering both obvious and less obvious scenarios that could impact the system.
4. **Assess severity:** Evaluate the potential consequences and impact of each failure mode. This step helps prioritize risks based on the severity of their effects.
5. **Analyze causes:** Determine the root causes of each failure mode, probing into the factors that could lead to its occurrence.
6. **Review existing controls:** Assess the effectiveness of existing controls and measures in place to mitigate the risks associated with each failure mode. Identify gaps or areas of improvement.
7. **Recommend actions:** Suggest specific actions to control or eliminate identified risks. These actions could encompass process modifications, design enhancements, or additional safeguards.
8. **Implement and monitor:** Execute the recommended actions and continuously monitor their effectiveness to ensure successful risk mitigation.

The Benefits of FMEA

Implementing FMEA as part of a comprehensive risk management strategy offers numerous benefits to organizations:

- **Proactive risk identification:** FMEA allows organizations to identify potential risks before they occur, enabling proactive decision-making and resource allocation.
- **Enhanced problem-solving:** FMEA fosters a multidisciplinary approach, promoting collaboration and diverse thinking when analyzing risks and designing preventive measures.
- **Optimized resource allocation:** By prioritizing risks based on their severity, organizations can allocate resources effectively, focusing on critical areas that demand immediate attention.
- **Improved decision-making:** FMEA provides decision-makers with actionable insights and data-driven recommendations, facilitating informed choices in managing risks.
- **Increased operational efficiency:** By identifying and addressing potential failure modes, organizations can minimize costly disruptions, reduce downtime, and enhance overall operational efficiency.
- **Enhanced customer satisfaction:** Proactively managing risks uncovers opportunities for organizations to deliver reliable products and services, improving customer satisfaction and loyalty.

FMEA in Different Industries

FMEA finds application in a wide range of industries including:

- **Manufacturing:** FMEA helps manufacturers identify potential defects or failures in their production processes, enabling them to implement preventive

measures and improve product quality.

- **Healthcare:** In the healthcare sector, FMEA assists in assessing risks associated with medical procedures, identifying potential failure points, and enhancing patient safety.
- **Automotive:** FMEA helps automotive manufacturers identify safety risks, reliability concerns, and potential failures in vehicles, ensuring they meet the highest standards of quality and performance.
- **Software development:** FMEA is utilized to identify software failures, improve code quality, enhance user experience, and minimize the risk of security breaches.
- **Aerospace and aviation:** FMEA plays a critical role in the aerospace industry, helping identify failure modes in aviation systems, ensuring passenger safety, and preventing catastrophic accidents.

FMEA serves as a powerful tool for organizations seeking to enhance their risk assessment capabilities. By systematically analyzing potential failure modes and effects, organizations can make informed decisions, allocate resources effectively, and minimize the probability of failures occurring. Implementing FMEA fosters a proactive approach to risk management, empowering businesses across a spectrum of industries to deliver reliable products and services while safeguarding their reputation and success.

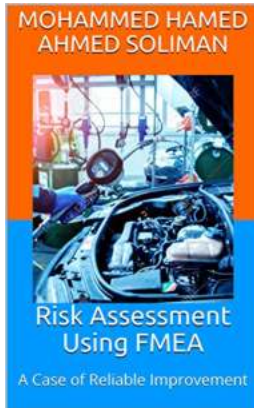
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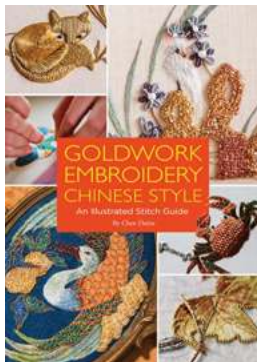
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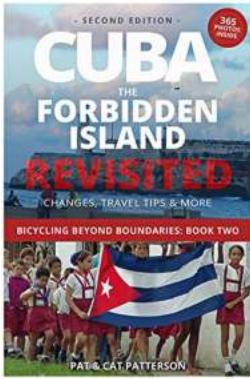


A Failure Mode and Effect Analysis FMEA is a systematic method for identifying and preventing product and process problems before they occur. FMEAs are focused on preventing defects, enhancing safety and increasing customer satisfaction. FMEAs are conducted in the product design or process development stages, although conducting an FMEA on existing products and processes can also yield substantial benefits. Also Six Sigma's project team use FMEA in the Analyze stage of DMAIC.



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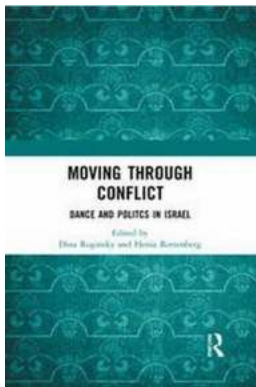
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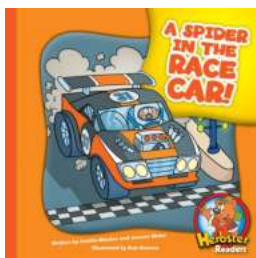
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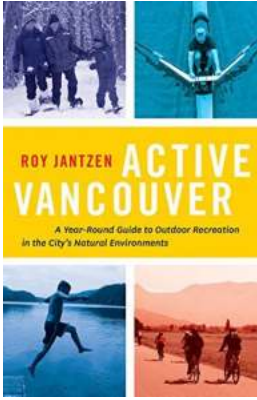
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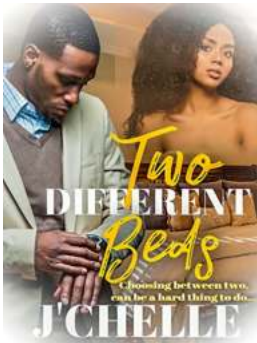
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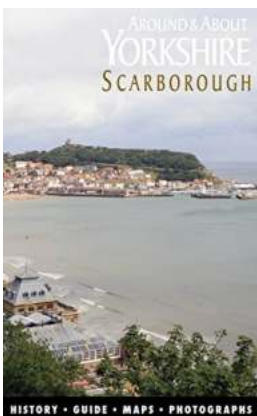
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