

Project Report: Comprehensive Guidance Document

Module: EG5016 - Exploring Engineering Project Management

Poster Weighting: 30% of Total Assignment

Introduction:

- **Brief Overview:** Provide a brief introduction to the project, its scope, and the problem or opportunity being addressed.
 - **Systems Thinking Context:** Mention the broader system the project fits into (stakeholders, external influences like regulations, market trends, and environmental concerns).
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Results and Discussion (Organized Using 6 Sigma - DMAIC):

1. Define (D):

- **Project Goals and Scope:**
 - Define the project objectives and scope clearly. This is where the **Objective Tree Diagram (OTD)** should be placed, showing how the broader goals break down into specific objectives that guide the project.
- **Voice of the Customer (VoC):**
 - Include how customer needs were captured and translated into technical requirements. You can reference the **Quality Function Deployment (QFD)** here, using it to show how these needs were integrated into the design.
- **Project Management Tools:**
 - Mention the use of **Gantt Chart** and **Work Breakdown Structure (WBS)** to define and plan the project. These tools are essential for organizing the project's tasks and timeline.

2. Measure (M):

- **System Analysis:**
 - Discuss the system mapping process, highlighting key system components and their interdependencies.
 - **SWOT Analysis:** Include the **SWOT Analysis** here to evaluate internal strengths and weaknesses, as well as external opportunities and threats that may impact the project.
- **Data Collection:**
 - Describe any data or information gathered to measure the system's baseline performance. This is where initial observations on customer needs or system constraints can be mentioned.

3. Analyse (A):

- **Risk Identification and Assessment:**
 - Include the first **Risk Assessment** here, identifying potential risks (both technical and system-level) and their impact.
 - This is also where you integrate your **DFMEA (Design Failure Mode and Effects Analysis)**, focusing on the top failure modes and how they could affect the broader system.
 - **Concept Generation and Selection:**
 - Describe how you generated multiple concepts and used tools like the **Pugh Matrix** to evaluate and select the best one.
 - Tie in how the **QFD** influenced the concept selection process, ensuring customer needs were considered in decision-making.
 - **Trade-offs and System Impact:**
 - Discuss how trade-offs were made in selecting the final concept. For instance, how did your team balance cost, performance, sustainability, and system-wide impact in making the decision?
4. **Improve (I):**
- **Detailed Design and Optimization:**
 - Present the **Product Design Specification (PDS)** and describe how the design was optimized to meet system requirements. This is where the design starts taking shape, addressing earlier identified issues.
 - **Quality Plan and Quality Register:**
 - Include your **Quality Plan** and **Quality Register** here, showing how quality was monitored and controlled throughout the project. These tools should indicate clear checkpoints and actions to maintain high standards during development.
 - **Continuous Improvement via PDCA Cycle:**
 - Explain how you used the **PDCA cycle** to continuously improve the design and optimize for system-wide performance, ensuring that feedback loops were in place.
5. **Control (C):**
- **Final Implementation Plan:**
 - Discuss the final **Implementation Plan** and how you ensured the project met the timelines and system goals.
 - **Risk Mitigation:**
 - Present the final **Risk Mitigation Plan**, showing how the risks identified earlier (via DFMEA and risk assessment) were managed or reduced throughout the project.
 - **Sustainability and Long-Term Impact:**
 - Reflect on how your design incorporates long-term sustainability and system integration. Consider the broader impacts, such as environmental concerns or lifecycle management.
 - **Final Quality Check:**
 - Revisit the **Quality Plan and Register** and document how the quality was maintained at the final stages of the project. Ensure that all goals related to performance, customer satisfaction, and sustainability were met.

Conclusion:

- **Project Outcomes:**
 - Summarize the key results and how the final concept met both the system-wide goals and the specific objectives outlined in the industry brief.
 - **Graduate Attributes:**
 - Briefly highlight how working on this project helped develop key skills such as teamwork, communication, and critical thinking.
 - **Future Recommendations:**
 - Suggest areas for future improvement or continuous development, linking back to the systems thinking and DMAIC framework used throughout the project.
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Appendices:

- **Meeting Minutes:**
 - Include minutes from your meetings with the industry partner, showing how you incorporated their feedback into your project decisions.
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Guidance on Tool Placement:

1. **Objective Tree Diagram (OTD):**
 - Place this in the **Define** phase of the report. The OTD should help outline the project's broader goals and how they translate into specific objectives.
2. **Quality Function Deployment (QFD):**
 - Use this in both the **Define** and **Analyse** phases. The QFD should demonstrate how customer needs (VoC) were integrated into the design, and it can also appear during concept selection to show how these needs informed your decisions.
3. **Quality Plan and Register:**
 - These should appear in the **Improve** and **Control** phases. The **Quality Plan** will show how quality standards were set, while the **Quality Register** will track and monitor how those standards were maintained throughout the project.
4. **Risk Assessments:**
 - The initial **Risk Assessment** and **DFMEA** should be included in the **Analyse** phase, while the final **Risk Mitigation Plan** will go into the **Control** phase to show how risks were managed throughout the project.
5. **SWOT Analysis:**
 - Include the **SWOT Analysis** in the **Measure** phase, where you evaluate both internal and external factors that could impact your project.