**Project Charter Document**



**Project Name:** Reduction of Machine Downtime

**Industry:** Automotive Manufacturing

**Department:** Operations / Maintenance

**Product/Process:** Vehicle Fuel Pump Manufacturing Process



**Prepared By**

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| --- | --- |
| **Document Owner(s)** | **Project/Organization Role** |
| ASVS MOUNIKA | DATA ANALYST |
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**Project Charter Version Control**

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| **Version** | **Date** | **Author** | **Change Description** |
| 1.0 | 26/06/2024 |  | Document created |
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# PROJECT CHARTER PURPOSE

The project charter defines the scope, objectives, and overall approach for the work to be completed. It is a critical element for initiating, planning, executing, controlling, and assessing the project. It should be the single point of reference on the project for project goals and objectives, scope, organization, estimates, work plan, and budget. In addition, it serves as a contract between the Project Team and the Project Sponsors, stating what will be delivered according to the budget, time constraints, risks, resources, and standards agreed upon for the project.



# PROJECT EXECUTIVE SUMMARY

* Business Problem: Machines which manufacture the pumps. Unplanned machine downtime which is leading to loss of productivity.
* Business Objective: Minimize unplanned machine downtime.
* Business Constraint: Minimize maintenance Cost.
* Success Criteria:
  + Business Success Criteria: Reduce the unplanned downtime by at least 10%.
  + Economic Success Criteria: Achieve a cost saving of at least $1M
* Data Collection: Extracted from different websites and provided dataset.
* Scope: The problem statement focuses on minimizing unplanned machine downtime in the manufacturing of vehicle fuel pumps. By analyzing operational data, we aim to identify key factors contributing to downtime and implement predictive maintenance strategies. This will enhance productivity and efficiency in the manufacturing process, ensuring consistent output and reducing maintenance costs.
* Assumptions: That downtime is predominantly caused by mechanical failures and human errors, uniformly disrupts operations, and can be effectively mitigated through preventive maintenance and technological solutions like IoT.
* Risks: Machine downtime include reduced productivity, increased costs, operational disruptions, compromised quality, and impacts on employee morale.
* Timeline: Project will be for 20 to 25 days.
* Approach: Data Analytics Project Management Methodology



# PROJECT OVERVIEW

* The project aims to minimize unplanned machine downtime in the manufacturing of vehicle fuel pumps, addressing significant productivity losses.
* By leveraging a dataset containing operational parameters such as pressures, temperatures, vibrations, and speeds, we seek to reduce downtime by at least 10% and achieve $1M in cost savings.
* Data preprocessing involves cleaning, normalizing, and handling missing values to ensure data integrity.
* Subsequent exploratory data analysis (EDA) and predictive modeling will uncover patterns and provide actionable insights.
* The ultimate goal is to enhance machine reliability and optimize maintenance strategies, driving efficiency and reducing costs.



# PROJECT SCOPE

## Project Deliverables

|  |  |
| --- | --- |
| **Milestone** | **Deliverable** |
| * Identifying Constraints and design the project architecture, explore various public forums to collect relevant data, Data Preparation. | * Deliverable 1.1—Identifying Constraints and design the project architecture. * Deliverable 1.2—Explore various public forums to collect relevant data. * Deliverable 1.3— Data Preparation |
| * EDA and Descriptive Analytics | * Deliverable 2.1— EDA and Descriptive Analytics * Deliverable 2.2— Insights documentation |
| * Show case and review, Final Presentation and documentation, Handover and KT. | * Deliverable3.1 – show case and review. * Deliverable3.2 – Final Presentation and documentation * Deliverable3.3 – Handover and KT |

## Deliverables Out of Scope

* Web Application
* Mobile App
* Cloud based deployment

## Project Duration (start date: 24/06/2024 End date: 10/07/2024)

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Milestone** | **Date Estimate** | **Deliverable(s) Included** | **Confidence Level** |
| * Identifying Constraints and design the project architecture, explore various public forums to collect relevant data, Data Preparation. | [24/06/2024]  -  [29/06/2024] | * Deliverable 1.1—Identifying Constraints and design the project architecture. * Deliverable 1.2—Explore various public forums to collect relevant data. * Deliverable 1.3— Data Preparation | [High] |
| * EDA and Descriptive Analytics | [30/06/2024]  -  [07/07/2024] | * Deliverable 2.1— EDA and Descriptive Analytics * Deliverable 2.2--- Insights documentation | [High] |
| * Show case and review, Final Presentation and documentation, Handover and KT. | [08/07/2024]  -  [10/07/2024] | * Deliverable3.1 – show case and review * Deliverable3.2 – Final Presentation and documentation * Deliverable3.3 – Handover and KT | [Medium] |



# PROJECT CONDITIONS

## Project Assumptions

* Data will be extracted from public sources and then client provided data is mapped and finally one master data will be shared by Innodatatics for further analysis.
* Dashboards and insights are mandatory.

## Project Issues:

**Priority Criteria**

1 − High-priority/critical-path issue; requires immediate follow-up and resolution.

2 − Medium-priority issue; requires follow-up before completion of next project milestone.

3 − Low-priority issue; to be resolved prior to project completion.

4 − Closed issue.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Date** | **Priority** | **Owner** | **Description** | **Status & Resolution** |
| 1 | 04/07/2024 | Closed | Data Analyst | Inconsistent data formats causing load errors. | **Status**: Closed. **Resolution**: Standardizing data formats and re-importing. |
| 2 | 05/07/2024 | Low | Data Scientist | Missing values in critical columns affecting analysis | **Status**: Closed  **Resolution**: Implemented imputation strategies. |

## Project Risks:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Risk Area** | **Likelihood** | **Risk Owner** | **Project Impact-Mitigation Plan** |
| 1 | Data Quality Issues | High | Data Analyst | Ensure thorough data cleaning and preprocessing to handle missing, inconsistent, or incorrect data. Implement validation checks during data collection. |
| 2 | Inaccurate Predictive Models | Medium | Data Scientist | Use cross-validation techniques to evaluate model accuracy. Incorporate domain expertise to refine features and validate results with historical data. |
| 3 | Data Security and Privacy | Low | IT Security Team | Implement robust data security measures, including encryption and access controls. Regularly audit and monitor data access and usage. |



# PROJECT REFERENCES – Any previous projects you have referred. If yes, please share the details.

|  |  |
| --- | --- |
| **Project** | **Description** |
| [m Optimization of Machine Downtime in Plastic Manufacturing | In a plastic manufacturing factory Machine Downtime increased due to many factors such as mainly due to improper machine maintenance. |

# APPROVALS

**Prepared by** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Manager

**Approved by** Sharat Chandra M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Project Sponsor

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Executive Sponsor

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Client Sponsor

