# Analytics Startup Plan

**Synopsis: *This document provides a high-level walkthrough of the activities required to guide completion of the analysis.***

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| **Project** | Analyzing Revenue Growth Rate Using Predictive Modeling |
| **Requestor** | Abhik Sarkar |
| **Date of Request** | 2024-07-15 |
| **Target Quarter for Delivery** | Q3 |
| **Epic Link(s)** | https://www.kaggle.com/datasets/lastman0800/supply-chain-management/data |
| **Business Impact** | Accurate forecasting of revenue growth rates can considerably improve strategic planning, resource allocation, and operational efficiency, resulting in increased profitability and competitiveness. |

## 1.0 Business Opportunity Brief

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|  | Clearly articulated business statement of the Ask, opportunity, or problem you are trying to solve for. An important step is to understand the nature of the business, system or process and the desired problems to be addressed. This will be communicated back to All stakeholders for alignment. |

**Problem Statement:**

Ather's current products include electric bikes, battery energy storage from home to grid-scale, solar panels and solar roof tiles, as well as other related products and services.

How can the Revenue Growth Rate, represented on a scale from 1 to 15, be accurately predicted and improved based on various supply chain management practices and performance indicators?

**The specific ask:**

Create a strong predictive model that reliably forecasts Ather’s revenue growth rate, using thorough data on supply chain management techniques and performance indicators.

## 1.1 Supporting Insights

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|  | Define any supporting insights, trends and research findings. Where relevant, list key competitors in the market. What are their key messages, products & services? What is their share of market, nationally and regionally? |

**Trends:** Increasing reliance on cutting-edge technologies such as AI and Blockchain in supply chain management, emphasizing the importance of data-driven decision-making.

**Research Findings:** Studies suggest that effective supply chain management methods can have a considerable impact on revenue growth.

**Competitors:** Apple, Microsoft, and Google are major competitors, all of which use modern SCM techniques and technologies.

**Market Share:** These companies dominate the market, with significant national and regional shares, due to their effective supply chain processes.

## 1.2 Project Gains

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|  | *Describe any revenue gains, quality improvements, cost and time savings (as applicable). What will you do differently and why would our customers care. What are the implications if we do nothing? This section is particularly key for prioritization against company goals and KPI’s.* |

**Revenue Gains**: Accurate forecasting can lead to strategic investments and higher revenue growth.

**Quality Improvements:** Better understanding of SCM practices can enhance operational efficiency.

**Cost and Time Savings:** Optimized resource allocation can reduce costs and save time.

**Implications if not addressed:** Without accurate forecasting, businesses risk inefficient resource allocation and missed growth opportunities.

## *Note: Completion of the following sections is possible only after a careful assessment and triage of the Ask. This is required to determine scope, resource, time, priority and data availability.*

## 2.0 Analytics Objective

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|  | List the key questions, assumptions and define the hypotheses. Often the deliverable may not just be an analysis output, however a recommended operating model or blueprint for a pilot etc.  Note: Asking the right questions and truly understanding the problem will lead to the right data, right mathematics, and right techniques to be employed. |

## **Key Questions:**

## What SCM practices are most influential in driving revenue growth?

## How do different technologies utilize in supply chains impact revenue growth?

## Can supply chain agility and order fulfillment rates be significant predictors of revenue growth?

## 2.1 Other related questions and Assumptions:

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|  | *List any assumptions that may affect the analysis* |

**Assumption**: Accurate data on SCM practices and performance metrics are available and reliable.

**Related Questions:** How does supplier count, and lead time affect revenue growth?

## 2.2 Success measures/metrics

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|  | *What does success look like? Define the key performance indicators (success definition/indicators, drivers and key metrics) against which the objectives will be analyzed. These should be drawn from the interlock meeting with key stakeholders and will inform the approach and methodology for the analysis.* |
|  | * **Key Performance Indicators:** * Accuracy of the predictive model * Identification of key drivers of revenue growth * Improvement in strategic planning and resource allocation efficiency |
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## 2.3 Methodology and Approach

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|  | *Now that you have a good understanding of the Ask and deliverable, detail the recommended approach/methodology.* |

 **Type of Analysis:** Linear regression, Decision trees, and Random Forest models.

 **Methodology:**

* Data Collection: Gather comprehensive data on SCM practices and performance metrics.
* Data Preprocessing: Clean and encode data, handle missing values.
* Exploratory Data Analysis (EDA): Identify trends and correlations.
* Feature Selection: Use statistical methods to select key features.
* Model Development: Train and validate predictive models.
* Evaluation: Assess model performance using metrics like R-squared, MAE, and RMSE.
* Deployment: Implement the model for strategic decision-making.

**Output:** TBD

## 3.0 Population, Variable Selection, considerations

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|  | Capture learning about the data available today location, structure, and reliability; this would include data in operational systems including dealer sourced, data warehouse and any CRM or email marketing systems available today. |

**Audience/population selection:**

* **Audience:** Company Executives Ather company
* **Population:** Companies with comprehensive SCM data available. (Tech Companies)

**Observation window:** TBD

**Inclusions:** TBD

**Exclusions:** Incomplete or unreliable data points.

**Data Sources:** Data is collected from Kaggle.

**Audience Level:** Ather Executive

**Variable Selection:** Inventory Turnover Ratio, Lead Time, Order Fulfillment Rate, Customer. Satisfaction, Technology Utilized, Environmental Impact Score, COGS, Total Implementation Cost.

**Derived Variables:** No derived variables are found.

**Assumptions and data limitations:** Assumed data is complete and accurate.

## 4.0 Dependencies and Risks

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|  | Identification of key factors that may influence the outcome of the project and likelihood of it happening: |

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| **Risk** | **Likelihood (based on historical data)** | **Delay (based on historical data)** | **Impact** |
| *Data quality issues.* | *Medium* | *High* | *Inaccurate or incomplete data can lead to unreliable predictions and poor decision-making.* |
| *Resistance to adopting new models.* | *Low* | *Medium* | *Stakeholders buy-in is necessary for successful implementation; resistance can hinder progress.* |

## 5.0 Deliverable Timelines

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|  | List key dates and timelines as a work-back schedule. Activate line items based on complexity and line-of-sight required. Will set the stakeholder expectations for the process. |

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| **Item** | **Major Events / Milestones** | **Description** | **Scope** | **Days** | **Date** |
| 1. | Kick-off / Formal Request | Initial project meeting to define scope and objectives. | Project | *2* | 2024-07-15 |
| 2. | Assessment / Triage | Initial assessment of the dataset and project needs. Evaluate data availability and quality and identify relevant stakeholders. | Data | 3 | 2024-07-17 |
| 3. | Prioritization | Prioritize tasks according to the evaluation and project objectives. Make a priority list of tasks for data issues and analysis. | Planning | 3 | 2024-07-20 |
| 4. | Data Exploration & Analysis   * Issues with duplicates * Issues with Spend data | Explore and analyze the dataset. Handle duplicates, assess spend data issues, derive variables.  Identify and resolve duplicate entries. Ensure data integrity and accuracy.  Verify and clean spend data. Correct any inconsistencies and prepare data for analysis | Analysis | 8 | 2024-07-28 |
| 5. | Story Board 1 | Create the first storyboard that summarizes the initial observations and plan. Present basic findings and a proposed analysis framework. | Presentation | 3 | 2024-08-01 |
| 6. | QA Output | The analysis output will be reviewed for quality assurance. To ensure the correctness and dependability of analytical outcomes. | QA | 2 | 2024-08-03 |
| 7. | Internal team Presentation | Present findings to the internal team. Share progress and gather feedback | Presentation | *1* | 2024-08-04 |
| 8. | Go/No Go | Decision point for advancing to the next phase. Evaluate whether the project is ready to move forward. | Decision | 1 | *2024-08-05* |
| 9. | Story Board 2 | Create a refined storyboard that includes new insights and recommendations. Provide enhanced insights and actionable recommendations. | Presentation | 3 | 2024-08-08 |
| 10. | Pilot | Test the recommended solutions on a small scale. | Testing | 7 | 2024-08-15 |
| 11. | Delivery & sign-off | Present the final report, observations, and action plans. | Delivery | *2* | 2024-08-17 |