This project aims to develop a **data-driven workload planning model** for a coffee shop business by integrating AI techniques, statistical methods, and linear programming. The expected outputs will include:

1. **Marketing-Oriented Analysis**
   Outcome nature: Desk research report
   - Developing a structured approach to marketing analysis and strategy formulation, leveraging AI tools.
   - **Customer segmentation**: Clustering techniques will be applied to historical customer data provided by the coffee shop owner to identify key consumer groups. (Smith, 2018)
   - **Value proposition analysis**: Sentiment analysis will be conducted on Google Map reviews and social media comments to quantify customer satisfaction. This will be refined based on industry reports and literature. (Chen, Wang & Zhang, 2023)
2. **Operation-Oriented Monitoring & Planning**
   Outcome nature: Static dashboard
   - **Information flow monitoring**: The dashboard will track and visualize key operational data, including:
     - Daily revenue and cost structures (Li & Zhao, 2022)
     - Inventory levels (e.g., coffee beans, milk) and ingredient condition (best-before dates)
     - Equipment usage monitoring (e.g., coffee machines, refrigerators) to issue maintenance reminders (Anderson, 2021)
     - **Supply chain optimization**: Supplier delivery cycles will be analyzed to improve procurement efficiency. This will involve tracking supplier performance, lead times, and aligning purchasing decisions with demand forecasts. (Jones & Brown, 2020)
   - **Workload Planning**:
     - **Workload prediction**: Time series analysis will be used to model demand trends. The feasibility of multivariate forecasting will be assessed after initial data exploration. (Li & Zhao, 2022)
     - **Staff shift scheduling**: Employee shifts will be planned based on demand forecasts while optimizing wage costs and skill matching to ensure efficient task allocation. (Smith, 2018)
3. **Profit Improvement Analysis**
   Outcome nature: Static dashboard & desk research report
   - Customer accumulation analysis (daily, weekly, monthly comparisons)
   - **Overall profit calculation**, including product-level performance insights to evaluate revenue drivers and optimize pricing strategies. (Chen, Wang & Zhang, 2023)
   - Identifying key profitability trends based on data visualization and statistical comparison across different time periods.