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# Brewing Smart

# Power BI Solution

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Food Waste Management Dashboard for “DayBreak Cafe”

Group No. 04

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## 1 Project Executive Summary

The Brewing Smart Power BI Solution is a data-driven project that aims to reduce food waste at Day Break Cafe by 15% within two halfmonths. The project's goal, using a Power BI dashboard, is to optimize inventory management and give actionable insights to reduce waste. This project aims to reduce overstocking and spoilage while boosting the cafe's operational efficiency, profitability, and environmental sustainability.

Overstocking, spoilage, and inadequate inventory techniques all contribute to food waste at the cafe. These concerns not only have an impact on the cafe's profitability, but they also contribute to avoidable environmental waste. The project's solution includes monitoring waste patterns, identifying inefficiencies, and giving real-time information via a Power BI dashboard. This will allow the cafe's management to make more informed decisions and implement successful waste-reduction methods.

The project is organised using an agile methodology, which ensures flexibility and continual feedback. Key deliverables of the project include a Power BI dashboard for real-time waste tracking, weekly and monthly waste reports, and staff training on the new processes. However, risks such as data quality issues, resistance to change, and integration challenges could impact the project.

By achieving a 15% reduction in food waste, Day Break Cafe will save money, increase operational efficiency, and boost its brand reputation. The project also opens the path for future scalability and new partnerships, assuring the long-term viability of waste management programs.

## 2 Project Information

This Section is a quick overview of the project.

<b>Project name</b>	<b>'Brewing Smart' Power BI Solution</b>
<b>Group Number</b>	<b>4</b>
<b>Project Manager</b>	<b>Tishan Athukoralalage</b>
<b>Project Sponsor</b>	<b>Danny and Angie(Owners)</b>
<b>Project SharePoint site (link):</b>	Link <a href="#"><u>Presentation Slides</u></a> <a href="#"><u>Dashboard Explanation Video</u></a>

## **2.1 Project Scope**

The focus of this work is on identifying and developing an integrated approach to using Power BI to track food waste at Day Break Café. The aim of this project is to use numeracy skills in order to minimize wastage, optimize orders of supplies, and increase the productivity of the café. The food waste tracking by item, inventory level, and profit and loss have been integrated as a dashboard that has been developed with utmost attention in order to allow for the real-time monitoring of other key business processes. Through such visualization, the café management can see which items are most likely to be wasted so that proper action can be taken.

The main functionalities of the Power BI solution include direct real-time data interaction in the form of filters and slicers that enable the café staff and the management to perform selective questioning for detailed analysis. It facilitates display of wastage details in relation to the item name and category as well as the time period of the food being sold in the firm. Besides, a cost of waste element is also incorporated into the system so as to demonstrate how wastage leads to financial losses. The integration enables the café to prioritize corrective actions since the control system indicates which wastage minimization activities bring maximum saving. This Power BI solution includes data for wastage rates and tendency, as well as the rationale behind wastage, and stock management goals, which should contribute to reducing operational issues, minimizing wastage and increasing profitability. This quantitative based tool will help Day Break Café in promoting good food management practices and hence improve its inventory management hence improving performance at Day Break Café.

## **2.2 Assumptions**

For this project, there are a number of important assumptions that must be made: First, it is postulated that the historical data used by Day Break Café are authentic and exhaustive, and the bona fide nature of the input data affects the accuracy of the analyzed results. Even with this advanced Power BI solution, the lack of constant and comprehensive data may reduce the efficiency of the insights in identifying food waste patterns and issues.

Moreover, it is presupposed that the tools that are necessary for the project, including Power BI, and any data integration application, is going to be available and functional during the entire duration of the project. Some of these tools include survey, chat box, and support. Some complications with these tools can affect the dashboard and its interactivity. In addition, we expect the staff of the café to be willing and able to input the right data as frequently as possible because one of the main components of the dashboard is the interaction with the data in real time and having the reports updated constantly for managerial use. Many of these assumptions form the bedrock for the possibility of the project to provide solutions for optimum reduction of food wastage.

## **2.3 Constraints**

As with any project, there are several limitations to this food waste management. One of the main weaknesses that may also turn into threats is the limitation of funds available for the specific project within this case; this limitation defines the level of data integration and the degree of customization of the Power BI dashboard. The problem of financial constraint may hinder the café from affording to purchase better equipment or employing statistical professionals in the process. However, time is also another stringent factor that restricts the completion time of the project. However, if the café requires the solution to be implemented within a short time, it may mean that only a limited analysis or testing can be made to the solution to guarantee efficiency.

There are also challenges caused by system and software limitations. Power BI is quite powerful but one might get choked when trying to merge high volumes of information or try and work across many connections. These elaborate data integration approaches might take a long time to implement or occasionally face technical challenges that would slow down or even compromise the project's physical implementation, thereby hampering real-time reporting. The final constraints are the extensibility with regards to users and training for facilitating their change. Despite the fact that this kind of dashboard is supposed to be rather familiar, some of the staff of Day Break Café can take some time and may need training in order to make proper usage of the system. Such constraints have to be well controlled so that the project realizes the intended value that has been set by the constraints.

## **3 Approach**

The Power BI Dashboard for Day Break Café is a strategic and systematic process that is employed to address certain business goals and objectives that focuses on issues such as food wastage and ineffective inventory control. The project will incorporate different data analysis methods, user participation strategies, and advanced data visualization technologies in order to meet the café's current problem and its sustainability needs.

The project begins with a clear understanding of the primary objective: reducing food waste. In order to attain this objective, the strategy will involve having a Power BI dashboard that monitors data visualization regarding food wastage, inventory status, and expenses. Implementing strategy involves data acquisition, the construction of the dashboard, and the designing of the visualizations, where the focus is on real-time data engagement and ease of use.

The first process in this approach involves gathering and coordinating all the information. Information regarding food waste, the sale, and stock will be collected from Day Break Café local records. It will be useful in understanding the causes and cycle contributing to food waste and this, [space] Collection of the data will involve the assistance of the personnel in the café in order to ensure compliance with the data collection process. Identifying information includes names of items, amount of waste, reasons for wastage, amounts of items in stock, café sales information, and costs involved. These will be

pre-processed by removing any solicitations in the data so that they can be aligned with the Power BI data display format.

After data collection and data cleaning, the subsequent step is configuring the Power BI Dashboard. This will be followed by the creation of a dashboard that would include the essential goals that inform the café's waste management and inventory. Several kinds of charts such as pie, bar, stacked area, and donut charts for side-by-side comparison of food waste and stock with complex and multi-dimensional analyses. Every visualization will have its objective and provide more comprehensive information concerning different aspects of the café. For example, Pie series will present waste using item names while Area series will illustrate waste trends. These visualizations will enable the café management at earliest time to recognize the area where wastes are common and ought to be corrected.

As for the concept of the dashboard, it will be following the principles of simplicity and clarity. A dimension like slicers, enables the users to drill down to any category or time period of interest and thus be able to interact with the data fully. This real-time interactivity is critical for allowing the users to make decisions at first instance. For instance, a manager could choose to use a data filter where data is presented on a monthly basis to enable the manager to identify either seasonality or promotions as the reasons for changes in the levels of wastes.

The other key feature of the project approach is the visualization development. With the help of Power BI, one can add quite complex and interactive charts and graphs that can be updated and changed immediately as new data is fed into the model. The planned visualizations will not only present data but will also make data easily understandable for café workers who can have no great experience of handling and interpreting data. For example, colour coding will be used to label waste areas, while tooltips and simple drill through capabilities will provide detailed information when necessary. Using these techniques, it will make the dashboard very useful in assisting the decision-making processes.

Besides the technological factors, which have been widely described within the framework of the project, the key challenge that will contribute to the success of the project greatly will be engagement models. The project work will be carried out in consultation with the Power BI development team, the managers of the café, and the employees. Periodic need finding sessions will also be conducted to discuss the use and effectiveness of the dashboard. It is also important to ensure that the roles of stakeholders are defined right from the start; café management will supply the business requisite, staff will input the data, while the development team will be tagged for dashboard deployment. This collaborative work structure will also guarantee that the end result addresses the store's goals and considers its functioning issues.

To ensure the project becomes successful, sophisticated tools and methodologies of data analysis will be used at the times of development. For data modelling, Power BI will be employed, through which data into different relations, for instance, sales data and waste data can be built. These relationships will be important in first identifying the relationship between waste and sales performance, and or inventory. Moreover, DAX (Data Analysis Expressions) formulas will be utilized to make calculations and create new measures including the monetary value of wastage. These enhanced analytical features will provide the

café with not only the amount of waste generated but also the cost implications of this waste within the café.

The last component of the project approach is the testing and fine-tuning component. Before the actual implementation of the dashboard, a sample of it will be made where all the visualizations will be checked to address whether or not all the visualizations in the dashboard are working and if data is shown in a proper manner. During this phase feedback will be sought from the users to determine which areas of the system needs to be changed. After testing, the dashboard will be implemented and can be accessed by café staff and management. Awareness creation and training of the users will also be undertaken in relation with the use of the data dashboard in reducing food wastage and optimizing inventory.

### **3.1 Requirements**

#### **Business Requirements:**

The primary business objective of the project is to reduce food waste at Day Break Cafe by 15% within two months. The solution should provide insights into waste trends, highlight areas of inefficiency, and suggest corrective actions. Key stakeholders include the cafe owner, manager, and staff, who require clear, actionable reports to reduce costs and enhance operational efficiency.

#### **Functional Requirements:**

The system must integrate with the cafe's inventory and sales data to track waste in real-time. Power BI dashboards should be created to visualize daily, weekly, and monthly waste patterns, alongside recommendations for reducing waste. Features such as drill-down capabilities, data filtering, and exporting reports for management review must also be included.

#### **Non-Functional Requirements:**

The solution should be user-friendly, providing intuitive navigation for staff with limited technical expertise. It must perform efficiently, handling large datasets without significant delays, and offer responsive interactions, especially when analyzing different time periods.

#### **Technical Requirements:**

The project will use Microsoft Power BI for data visualization and analytics. Data integration will require linking to sales and inventory databases. The system should allow for automated data updates, ensuring real-time accuracy. It must also support secure role-based access to restrict sensitive data visibility based on user roles (e.g., manager vs. staff).

This approach addresses the need for a comprehensive waste management solution, supporting the business goal of reducing food waste while ensuring operational efficiency.

### **3.2 Deliverable**

The needs of the Power BI dashboard project are categorized under functional and non-functional needs. Functional requirements also encompass issues associated with the system processes, as well as the type of displays or visual representations of the data involved. One of the key requirements of the dashboard is an ability to combine a great deal of data that is generated in the company: sales, stocks and records of wastages. This data can only be refreshed in real-time or near real-time to offer current information for analysis and decision making. Pie charts, bar charts, and area charts are going to be useful for illustrating wastes, stocks, and monetary variables.

Non-functional requirements are quality characteristics of the software application involving the dashboard. But it has to have an easy-to-use and very clear design so the café's staff and management are able to easily find the necessary charts and work with the data using different filters and slicers. It should also be capable of fulfilling future data inputs and should not be restricted to additional metrics and visualization interfaces at a later date. Moreover, such a concept as compatibility with other systems and the need for minimal technical support of the dashboard should also be inherent in the chosen option.

To this end, the following specifications are proposed to make sure that the Power BI dashboard fits the needs of the café and become a useful management tool in tracking food waste and stock levels.

### **3.3 Proposed Deliverables**

The following are the proposed deliverables for this project to guarantee that Day Break Café has all that it needs to deal with food waste and the inventory. The key tangible deliverable is the Power BI dashboard, complete with all end-user data visualizations and interactivity identified in the project brief. It will give the figures from the food waste, stock, and the company's financial performance in real-time, allowing for decision-making.

Besides the dashboard, a comprehensive training programme for management and employees of café will also be conducted. During this training, participants will learn how to navigate the dashboard, understand the visualizations displayed, and apply the insight to save all that is possible and reduce wasted inventory. The training will help to familiarize all users of the system and thus become knowledgeable in the ability of the system to offer.

Last, the summary report of the project and the findings of the research work will be presented. This report shall highlight the processes that have been followed in the development process of this system including the data collection methods, design considerations and if any, the shortcoming encountered in the process. It will also contain instructions on how the dashboard may be used in the future and some

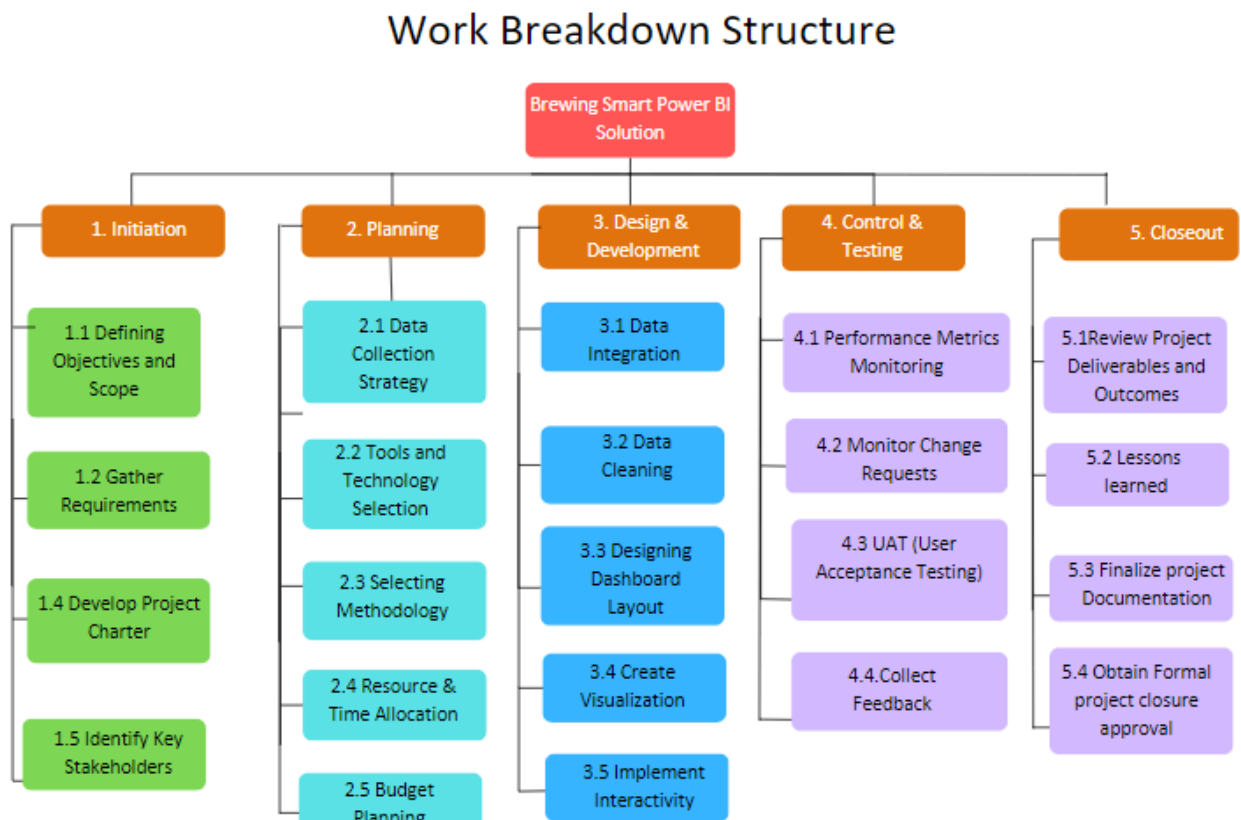


of the features that should be included in future models. These deliverables will enable the café to implement the necessary changes in order to reach the objectives of sustainability and efficiency.

## 4 Governance and Reporting

### 4.1 Governance Structure

#### 4.1.1 Work Breakdown Structure



This WBS describes the creation of the "Brewing Smart Power BI Solution" over 2.5 months, separated into five stages. Each phase aims to create a functioning and user-friendly Power BI dashboard by combining data to facilitate business decision-making and interactive exploration.

1. **Initiation:** In this phase, the foundation is set by establishing the project's scope and objectives in accordance with business requirements. Key activities include gathering stakeholder requirements and developing a project charter. The charter defines roles, responsibilities, and high-level project objectives, giving clarity and direction.

2. **Planning:** This phase focuses on developing a technical and strategic roadmap for successful implementation. A data gathering plan is developed, tools and technologies are chosen, and procedures are specified. Resource allocation and budget planning guarantee that the project is executed efficiently, with all required resources and financial considerations in place.
3. **Design and Development:** This stage marks the shift from project conception to construction. Data is merged and cleansed to verify its accuracy. The dashboard structure is intended to be simple to use, and interactive visualizations have been included to allow users to interact with the data in real time. This phase focuses on establishing a smooth user experience while maintaining technical accuracy.
4. **Control and Testing:** The dashboard's quality is assured by performance monitoring and change management. User Acceptance Testing (UAT) guarantees that the solution fulfils end-user needs. During this stage, feedback is actively collected, allowing for any necessary refinements before the final launch.
5. **Closeout:** The project concludes by analysing deliverables to ensure they meet the initial objectives. Lessons learnt are recorded for future initiatives, and all paperwork is complete. Formal closure occurs once relevant stakeholders have approved the project.

This methodical approach helps ensure the successful delivery of a Power BI solution within the scheduled 2.5-month timeline, balancing technical execution with stakeholder engagement.

#### 4.1.2 RACI matrix

In the "Brewing Smart Power BI Solution" project, the RACI matrix helps clarify the roles and responsibilities of the team members throughout the project's five phases. The matrix defines who is Responsible (R), Accountable (A), Consulted (C), and Informed (I) for each key task. The project team consists of:

- **Tishan** – Project Manager (PM)
- **Chaturanga** – Tech Lead
- **Abby** – Business Analyst (BA)
- **Harshita** – Quality Assurance Lead (QA)

This matrix ensures that everyone understands their role in each activity, promoting effective collaboration and accountability, and ensuring the project is completed within the 2.5-month timeframe.

#### Explanation of Roles:

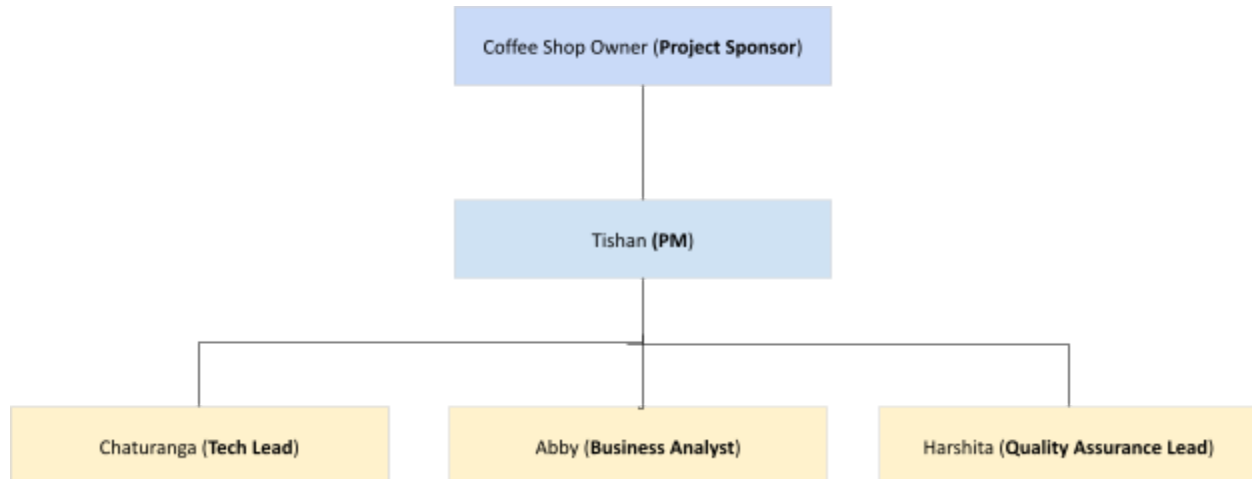
- **Responsible (R):** Team member responsible for completing the task.
- **Accountable (A):** The person who ensures the task is completed and has decision-making authority.
- **Consulted (C):** A team member who provides input or expertise.

- **Informed (I):** Person or group who is kept informed of progress or decisions but not actively involved.

Project Task	Tishan (PM)	Chaturanga (Tech Lead)	Abby (Business Analyst)	Harshita (Quality Assurance)
<b>1. Initiation</b>				
1.1 Defining Objectives and Scope	A	C	R	I
1.2 Gather Requirements	A	C	R	I
1.4 Develop Project Charter	R	I	C	I
1.5 Identify Key Stakeholders	R	I	C	I
<b>2. Planning</b>				
2.1 Data Collection Strategy	A	R	C	I
2.2 Tools and Technology Selection	A	R	C	I

2.3 Selecting Methodology	A	R	C	I
2.4 Resource & Time Allocation	R	C	C	I
2.5 Budget Planning	I	C	I	R
<b>3. Design &amp; Development</b>				
3.1 Data Integration	I	R	C	I
3.2 Data Cleaning	I	R	C	I
3.3 Designing Dashboard Layout	A	R	C	I
3.4 Create Visualization	A	R	C	I
3.5 Implement Interactivity	A	R	C	I
<b>4. Control &amp; Testing</b>				
4.1 Performance Metrics Monitoring	A	R	I	I
4.2 Monitor Change Requests	R	A	C	I
4.3 User Acceptance Testing (UAT)	A	R	C	I
4.4 Collect Feedback	A	R	C	I
<b>5. Closeout</b>				
5.1 Review Project Deliverables and Outcomes	A	R	C	I
5.2 Lessons Learned	A	R	C	I
5.3 Finalize Project Documentation	R	C	C	I
5.4 Obtain Formal Project Closure Approval	A	C	C	I

#### 4.1.3 Project Organisation Chart



- **Coffee Shop Owner (Project Sponsor):** The owner of the coffee shop for whom the waste reduction metrics dashboard is being created. Oversees the project, ensures it aligns with the goal of waste reduction, and approves key decisions and milestones.
- **Tishan (PM):** Project Manager responsible for overall coordination, ensuring the project meets deadlines, stays within budget, and delivers the desired outcomes.
- **Chaturanga (Tech Lead):** Leads the technical aspects of the project, focusing on data integration, development of the dashboard, and implementation of technical solutions.
- **Abby (Business Analyst):** Responsible for gathering requirements from the coffee shop owner, ensuring the business objectives are clear, and translating them into functional specifications.
- **Harshita (QA):** Quality Assurance lead, in charge of testing, ensuring the accuracy of the dashboard, and verifying that the system meets the requirements, including user acceptance testing.

## 4.2 Stakeholder Management

1. **Coffee Shop Owner (Project Sponsor):**  
The coffee shop owner serves as the project sponsor, providing direction and support for the waste reduction metrics dashboard. They define the project's vision, approve key milestones, and offer feedback throughout the process. By engaging in decision-making and validating the final solution, the owner ensures the project meets their expectations and aligns with their waste reduction goals.
2. **Tishan (Project Manager):**  
Tishan, the project manager, oversees the entire project, managing timelines, resources, and

team communication. They ensure the project stays on track and within budget while aligning with business objectives. Tishan facilitates regular updates, addresses potential risks, and fosters collaboration among stakeholders, ensuring smooth project execution.

3. **Chaturanga (Tech Lead):**

Chaturanga is the technical lead, responsible for guiding all technical aspects of the dashboard project. They oversee data integration, dashboard development, and technology decisions. By collaborating with the development team and providing regular updates to the project manager, Chaturanga ensures that technical deliverables meet the project's requirements.

4. **Abby (Business Analyst):**

Abby acts as the business analyst, gathering and analyzing business requirements from the coffee shop owner and stakeholders. She translates these needs into clear technical specifications, ensuring that the project aligns with business goals. Abby facilitates communication between stakeholders and the technical team to ensure expectations are met.

5. **Harshita (Quality Assurance):**

Harshita serves as the quality assurance (QA) lead, ensuring that all deliverables meet quality standards. She manages the testing process, including user acceptance testing (UAT), to validate the dashboard's functionality. By providing feedback on issues and improvements, Harshita ensures that the final solution is accurate and user-friendly, ready for deployment.

### 4.3 Communications Plan

Effective communication with stakeholders is essential for the success of the waste reduction metrics dashboard project. This plan outlines how communication will be managed based on each stakeholder's role and relationship to the project.

1. **Coffee Shop Owner (Project Sponsor):**

Communication with the project sponsor will be frequent and structured, with regular reports on project progress, milestones met, and obstacles encountered. Weekly meetings will be organised to review project direction and obtain input, ensuring that the owner's expectations are met and their ideas are included into the project.

2. **Tishan (Project Manager):**

Tishan will maintain open lines of communication with the entire team through Slack for day-to-day communications, facilitating immediate responses and collaboration. Weekly status meetings and daily check-ins as needed will ensure that everyone is aligned with project goals. A weekly progress report will also be circulated to keep all stakeholders informed.

3. **Chaturanga (Tech Lead):**

Communication with Chaturanga will involve technical discussions and updates on development progress. Tishan will hold weekly meetings with Chaturanga to review technical challenges and solutions. Additionally, Chaturanga will provide status updates

to the project manager and contribute to documentation in Notion, which will be accessible to all team members.

4. **Abby (Business Analyst):**

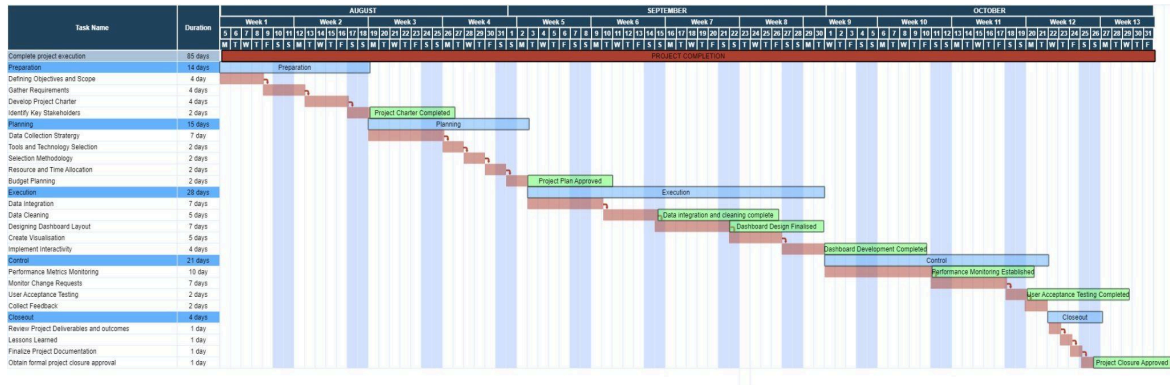
Abby will engage with stakeholders to gather requirements and provide updates on analysis findings. She will conduct regular meetings with the coffee shop owner and other stakeholders to ensure their needs are met. Abby will share summaries of stakeholder feedback with the development team through Notion, maintaining transparency and alignment.

5. **Harshita (Quality Assurance):**

Harshita will communicate regularly with both the project manager and the technical lead during the testing phases. She will provide updates on testing progress and any identified issues that require attention. Feedback sessions will be organized post-testing to discuss findings and make necessary adjustments. Progress and testing results will be tracked on a Kanban board to ensure quality standards are upheld throughout the project.

## 5 Project Controls

### 5.1 Schedule & Dependencies Management



<https://drive.google.com/file/d/136NGpNWjcENJkirEKSb0WRMj3Gu9YpN8/view?usp=sharing>

Phase breakdown and key milestones:

#### 1. Preparation (14 days)

Tasks: Defining objectives, gathering requirements, developing the project charter, and identifying key stakeholders.

Milestone: Project charter completed.

#### 2. Planning (15 days)

Tasks: Data collection strategy, selecting tools/technology, and allocating resources.

Milestone: Project plan approved.

#### 3. Execution (28 days)

Tasks: Data integration, cleaning, dashboard layout design, visualization creation, and implementing interactivity.

Milestones: Data integration/cleaning complete, dashboard design finalized, and dashboard development completed.

#### 4. Control (21 days)

Tasks: Monitoring performance metrics, change request management, and user acceptance testing.

Milestone: Performance monitoring established and user acceptance testing completed.

#### 5. Closeout (4 days)

Tasks: Reviewing deliverables, documenting lessons learned, and project closure approval.



Milestone: Project closure approved.

### 5.1.1 Preparation Phase



This is the initial groundwork phase, which is crucial to the project's success since it ensures that all key foundational parts are in place before any planning or execution can begin. It takes 14 days to define the scope, acquire initial requirements, and develop a solid project foundation.

**Defining objectives and scope (four days):** The team collaborates with stakeholders to properly define the objectives. This step outlines what success looks like for the project and aligns it with company goals. The scope is also established to ensure that the project boundaries are clearly understood, hence preventing scope creep later.

**Gathering Requirements (4 Days):** The next step is to obtain comprehensive functional and technical requirements. This is where you determine what the ultimate deliverables must accomplish, which will later affect project implementation. It includes conducting interviews with stakeholders, analysing existing processes, and documenting all requirements.

**Develop Project Charter (4 days):** After collecting requirements, the team prepares a formal project charter. This document describes the project's mission, major stakeholders, milestones, and the project team's roles and duties. It serves as an agreement between stakeholders and the project team.

**Identify Key Stakeholders (2 Days):** In parallel, key stakeholders for the project's success are identified. End-users, management, IT teams, and external vendors are all possible stakeholders. Identifying stakeholders early ensures their involvement and commitment throughout the project, limiting the possibility of misinterpretation.

**Milestone: Project Charter Completed** - The project charter is the formal start of the project, outlining major objectives and ensuring stakeholder buy-in. This allows the team to start preparing with a clear direction.

### 5.1.2 Planning Phase



Once the project charter is complete, the planning phase begins. Over the course of 15 days, the

team will create a clear roadmap to ensure that the project's objectives are met through resource allocation, data strategies, and financial planning. This step is important to the success of the execution.

**Data Collection Strategy (7 Days):** A well-thought-out data collecting plan is developed to ensure that the correct data is collected at the appropriate time and from the correct sources. This includes establishing the data sources, formats, and collection methods that will be used to populate the dashboard.

**Tools and Technology Selection (2 days):** Tools and technologies for data management, analysis, and visualisation are selected based on project needs and stakeholder feedback. This could include selecting software (for example, Power BI or databases), frameworks, and, if necessary, particular hardware requirements.

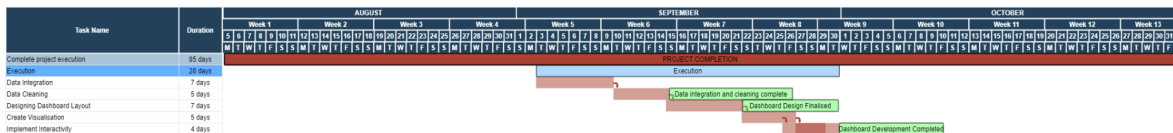
**Selection Methodology (2 days):** The team creates a methodology to guide decision-making throughout the project, including how data will be cleansed, converted, and processed to gain insights. This ensures consistent decision-making.

**Resource and Time Allocation (2 days):** Project managers assign team members to specific tasks while ensuring that time and resource commitments are consistent with the overall project plan. This includes assigning developers, analysts, and other team members according to their skills.

**Budget Planning (2 days):** A precise budget is created, ensuring a clear grasp of the financial resources needed to fulfil the project. This could include tool licenses, employee time, training, and other project expenses.

**Milestone:** Project Plan Approved - Stakeholders evaluate and sign off on the project plan, giving the team formal approval to continue forward with the execution phase. The schedule, resources, and costs have already been determined.

5.1.3 Execution Phase



This is the most active phase of the project, lasting 28 days. It includes generating and delivering the project's key deliverables, which range from data integration and cleansing to dashboard creation and design.

**Data Integration (7 days):** This task combines data from numerous sources into a database. Integration is required to ensure that all relevant data has been combined for analysis.

**Data Cleaning (5 days):** Following integration, the data is cleaned to assure quality and correctness. This procedure consists of deleting duplicates, fixing errors, and filling in missing information to ensure that the data is accurate and suitable for analysis.

**Designing Dashboard Layout (4 Days):** With clean data in place, the focus switches to designing the dashboard's visual appearance. The team creates a user-friendly structure that highlights critical metrics and data insights. Stakeholder feedback is critical here to ensure that it satisfies their expectations and requirements.

**Create Visualisation (4 days):** Data visualisations, such as charts, graphs, and maps, are created using the cleaned data. These visualisations will be used to highlight critical trends, patterns, and insights that stakeholders require in order to make informed decisions.

**Implement Interactivity (4 days):** The dashboard is made interactive, allowing users to examine the data by themselves. This could contain filters, drill-downs, and interactive components to increase user involvement and make the dashboard more helpful.

**Milestones:**

- 1. Data Integration and Cleaning Completed - The project now has high-quality data that can be used in the dashboard.
- 2. Dashboard Design Finalised - The visual and functional design of the dashboard has been finalised, allowing the team to go forward with development.

**5.1.4 Control Phase**



During the control phase, project outputs are monitored and checked to ensure they satisfy the required requirements. This is where the team makes sure everything is working properly, tracking progress, making changes, and confirming user feedback.

**Performance metrics Monitoring (10 days):** The dashboard and other project deliverables are regularly compared to preset performance measures to verify they match the required KPIs (Key Performance Indicators). Any deviations are documented and resolved.

**Monitor Change Requests (9 days):** Any modifications requested by stakeholders or team members are reviewed and evaluated for their impact. If accepted, changes are made to ensure that the project remains on track with its objectives without major disruptions.

**User Acceptance Testing (2 days):** Testing is done with real users to ensure that the dashboard works properly and meets all requirements. User feedback is integrated to make final modifications or enhancements before the project is closed.

Milestones:

- 1. Performance monitoring has been established for the project, and feedback loops assure continual development.
- 2. User Acceptance Testing Completed - This indicates that the deliverables are ready for final approval by stakeholders.

5.1.5 Closeout Phase



The final stage of the project involves reviewing all deliverables, documenting lessons learnt, and formally closing the project.

**Review the project deliverables and outcomes (1 day):** A final assessment ensures that all deliverables fulfil the project's initial objectives. Any anomalies are identified, and the team verifies that all outputs meet expectations.

**Lesson Learnt (1 Day):** The team documents the project's lessons learnt, including accomplishments, problems, and opportunities for development. This stage is critical for future initiatives that require ongoing improvement.

**Finalise Project paperwork (1 day):** All project paperwork, such as reports, data files, and contracts, is completed and preserved for future reference.

**Obtain Formal Project Closure Approval (1 day):** Stakeholders formally approve the project's closure, indicating that all objectives have been reached and the project is now officially complete.

**Milestone:** Project Closure Approved - This marks the completion of the project, with all deliverables handed over to the appropriate stakeholders.

The complete project lasts 85 days, with a systematic sequence from preparation to closeout. The timeline contains key tasks like data integration, dashboard design, and performance monitoring, ensuring that each step moves logically and with defined milestones. Key milestones, such as project charter completion, data cleaning, and user acceptability testing, keep the project on schedule to achieve the desired results, culminating in formal approval of the project's closure.

## 5.2 Financial Management

### 5.2.1 Cost Estimation

Effective project cost management guarantees that the project stays within the specified budget. The "Brewing Smart Power BI Solution" project's finances must be managed in order to accomplish the set scope, objectives, and deadline while staying within the budget.

This section outlines the methods and tools that will be used to manage, track, and control the project's finances, ensuring that all expenditures are accounted for, and any potential overruns are addressed promptly..

#### Cost Estimate

This project's cost estimate has been divided down into major categories such as project management, technical development, business analysis, QA/financial analysis, licensing, training, and maintenance. Each of these categories represents a critical work area needed to complete the final Power BI solution.

Key cost estimates:

Project Management: Project manager; this role is given 100 hours at \$60 per hour for a total of \$6,000.

Technical development, which is led by Chaturanga, the tech lead, takes up the greatest time and resources. The total cost for 200 hours at a rate of \$75 per hour is \$15,000.

Business Analysis: Abby, the business analyst, is in charge of gathering requirements and establishing critical indicators. This task is expected to take 80 hours at \$55 per hour, totaling \$4,400.

QA/Financial Analysis: Harshitha (QA Lead) will oversee data validation and financial analysis. The overall cost is \$3,000, based on a 60-hour estimate and a \$50/hour rate.

Licensing Costs: Power BI licensing for 4 users for 2.5 months at \$10/user/month results in a total cost of \$100.

Training & Support: One training session at a cost of \$500.

Maintenance & Updates: An additional 30 hours for ongoing support and bug fixes, billed at \$75/hour, leads to a total of \$2,250.

Category	Team Member	Description	Estimated Cost	Duration	Total Cost (2 months + 15 days)
1. Project Management	Tishan (Project Manager)	Oversees projects, manages timelines and resources	\$60/hour	100 hours	\$6,000
2. Technical Development	Chaturanga (Tech Lead)	Leads technical setup, data integration, and dashboard design	\$75/hour	200 hours	\$15,000
3. Business Analysis	Abby (Business Analyst)	Gathers requirements, defines key metrics for food waste	\$55/hour	80 hours	\$4,400
4. QA/Financial Analysis	Harshitha Shabad (QA Lead)	Performs data validation, financial analysis of food waste	\$50/hour	60 hours	\$3,000
5. Licensing Costs	Chaturanga (Tech Lead)	Performs data validation, financial analysis of	\$10/user/month	2.5 months	\$100

		food waste			
6. Training & Support	-	Training for team members	\$500/session	1 session	\$500
7. Maintenance & Updates	-	Ongoing suppo	\$75/hour	30 hours	\$2,250
Total Estimated Costs	-				<b>\$31,250</b>

## 5.2.2 Financial Plan according to the WBS

WBS Phase	Project Manager	Technical Lead	Business Analyst	QA Lead	Licensing Costs	Training & Support	Maintenance & Updates	SUM
<b>1. Initiation</b>								
Defining Objectives and Scope	\$1,200							\$1,200
Gather Requirements	\$1,100							\$1,100
Develop Project Charter	\$600							\$600
Identify Key Stakeholders	\$300							\$300
<b>2. Planning</b>								
Data Collection Strategy			\$825					\$825
Tools and Technology Selection		\$750						\$750
Selecting Methodology	\$300							\$300
Resource & Time Allocation	\$300							\$300
Budget Planning	\$300							\$300
<b>3. Design &amp; Development</b>								
Data Integration		\$4,500						\$4,500
Data Cleaning		\$3,750						\$3,750
Designing Dashboard Layout		\$2,250	\$825					\$3,075
Create Visualization		\$3,000						\$3,000
Implement Interactivity		\$1,500						\$1,500
<b>4. Control &amp; Testing</b>								
Performance Metrics Monitoring				\$1000				\$1,000
Monitor Change Requests	\$600	\$750						\$1,350
User Acceptance Testing (UAT)				\$1500				\$1,500
Collect Feedback			\$550					\$550
<b>5. Closeout</b>								
Review Deliverables & Outcomes	\$600		\$550					\$1,150
Lessons Learned	\$300							\$300
Finalize Project Documentation	\$600		\$275					\$875
Obtain Formal Project Closure	\$300							\$300
<b>Additional Costs</b>								
Licensing Costs (Power BI Pro)					\$100			\$100
Training for Team Members						\$500		\$500
Maintenance & Updates							\$2,250	\$2,250
<b>Total Estimated Costs</b>								<b>\$31,250</b>

<https://docs.google.com/spreadsheets/d/1CvEPcf6Pl-zKhG3fhR1OVcUxfG3TbQzy3i4eE9juUzE/edit?usp=sharing>

## 5.2.3 Cost-tracking tools

The project will use Microsoft Excel /Google Sheets or power BI to track project spending. Excel allows for thorough financial data tracking, whereas Power BI provides real-time visualizations and insights into cost performance, such as budget vs. actual expenditures, cost projections, and financial progress throughout different work breakdown structure phases.

## 5.2.4 Cost Change Control

Any change that affects the project's budget will go through a rigorous change control process. The project steering committee will examine and approve change requests to ensure that stakeholders understand the financial consequences before allocating additional resources.



### **5.3 Risk Management**

Risk management is critical to ensure that the "Brewing Smart Power BI Solution" project achieves its goals without major disruptions. Proper risk management enables the project team to foresee potential issues, mitigate their effects, and keep the project on budget, schedule, and quality. This section describes the steps and strategies that will be used to detect, assess, respond to, and monitor risks throughout the project's lifecycle.

Common sorts of risks in this project could include:

- Technical Risks: Issues with data integration, system compatibility, software glitches, or unexpected technical challenges during dashboard development.
- Resource Risks: Unavailability of essential staff (e.g., technical lead or business analyst), resulting in project delays.
- Schedule Risks: Project deliverables slide due to unexpected delays in technological development, testing, or data validation.
- Financial Risks: Budget overruns caused by underestimating expenditures or unforeseen expenses.
- Quality Risks: Deliverables that do not meet needed standards due to insufficient testing or a failure to acquire all criteria.
- External Risks: Changes in stakeholder requirements or reliance on third-party technologies such as Power BI, which may impact project

#### **5.3.1 Risk Assessment**

Once risks have been identified, the following stage is to determine their possible impact on the project. Each risk will be evaluated using two criteria:

- Likelihood: What is the probability that the risk will occur?
- Impact: If the risk occurs, how much of an impact will it have on the project?

Each risk will be classified as **low, medium, or high** based on its likelihood and impact. These classifications will help you determine which threats require immediate attention and resources.

### **5.3.2 Risk Response Planning**

Each detected and assessed risk will be accompanied by a reaction plan. Response planning aims to mitigate, transfer, avoid, or accept risks based on their severity.

- Risk Mitigation: Efforts to lessen the probability or severity of a risk. For example, additional testing may be performed to reduce technical risks associated with data integration.
- Danger Avoidance: Taking steps to prevent the danger from occurring. To prevent resource risks, ensure that critical workers and backups are available and allocated early in the project.
- Risk Transfer: Delegating responsibility for risk management to another entity, such as a vendor or contractor. This may relate to external hazards associated with third-party tools such as Power BI.
- Risk Acceptance: If the risk is regarded acceptable and managed, no urgent action should be taken. For example, accepting a modest delay in one phase if it does not have a significant impact on overall project timeframes.

### **5.3.3 Risk Monitoring and Control**

Throughout the project, risks will be continuously monitored, and the Risk Register will be updated on a regular basis to reflect any changes in the project environment. The project manager will hold regular risk review meetings to examine the status of existing risks, identify new risks, and evaluate the efficacy of response strategies.

### **5.3.4 Risk Register**

The Risk Register will be the key repository for tracking and monitoring project hazards throughout their lifecycle. The Risk Register will contain the following information for each risk

- Risk ID: A distinct identification for each risk.
- Risk summary: Provide a brief summary of the risk.
- Risk Category: The type of risk (technical, scheduling, or financial).
- Likelihood and Impact: The likelihood and impact were evaluated and scored as low, medium, or high.
- Risk Owner: The person in charge of managing the risk.
- Risk Response Plan: The action plan for mitigating the risk.
- Status: The risk's current status (open, mitigated, or closed).

Risk ID	Risk Description	Risk Category	Likelihood	Impact	Risk Owner	Risk Response Plan	Status
1.0	Technical difficulties during data integration (compatibility issues, bugs)	Technical	Medium	High	Chaturanga (Tech Lead)	Mitigate: Conduct thorough system compatibility tests and frequent backups to prevent data loss.	Open
2.0	Unavailability of key personnel during critical project phases	Resource	Medium	High	Tishan (Project Manager)	Avoid: Schedule and confirm availability of key personnel and have backup resources available.	Open
3.0	Delays in finalizing business requirements due to incomplete stakeholder input	Schedule/Scope	High	Medium	Abby (Business Analyst)	Mitigate: Regular stakeholder meetings and clear communication to gather complete requirements.	Open
4.0	Cost overruns due to underestimation of licensing and software tool costs	Financial	Low	Medium	Tishan (Project Manager)	Mitigate: Closely monitor costs, set aside contingency funds, and regularly review the budget.	Open
5.0	Bugs or performance issues identified during user acceptance testing (UAT)	Quality/Technical	Medium	High	Harshitha (QA Lead)	Mitigate: Comprehensive testing before UAT and allocate buffer time for addressing any issues.	Open
6.0	Delays in dashboard design due to technical complexity or data format issues	Schedule/Technical	Medium	High	Chaturanga (Tech Lead)	Mitigate: Conduct technical reviews early to detect issues and have a flexible design approach.	Open
7.0	Power BI feature updates or licensing changes that could impact project timelines	External/Technical	Low	Medium	Chaturanga (Tech Lead)	Transfer: Monitor Power BI updates, and work with Microsoft support if needed for feature issues.	Open
8.0	Stakeholder scope changes resulting in additional development work	Scope	Medium	High	Tishan (Project Manager)	Avoid: Implement strict change control processes and require approvals for scope changes.	Open
9.0	Insufficient user training leading to improper use of the Power BI solution	Operational	Medium	Medium	Abby (Business Analyst)	Mitigate: Provide comprehensive training sessions and create detailed user manuals.	Open
10.0	Poor quality of collected data, leading to inaccurate visualizations	Quality/Data	Medium	High	Harshitha (QA Lead)	Mitigate: Conduct data quality checks and validations before data is used in dashboard creation.	Open

## 5.4 Quality Management

The quality management plan ensures that the "Brewing Smart Power BI Solution" project produces high-quality results that meet or exceed the expectations of stakeholders and end users. This plan describes the processes, standards, and quality assurance methods that will be used to guarantee that all project deliverables conform to the established scope, business requirements, and technical specifications.

The "Brewing Smart Power BI Solution" project aims to meet both business and technology quality standards by adopting a comprehensive approach focusing on both functional and non-functional requirements. Functional measures include meeting all business needs and functional requirements, such as the dashboard's ability to display metrics, respond to user interactions, and present data in a meaningful way. Non-functional requirements focus on usability, maintainability, and scalability, ensuring the system is easy to use, maintain, and expand over time.

Performance is a critical non-functional aspect of this project, with performance testing measuring load times, response times, and data processing speeds. Data accuracy is crucial, and the project must implement data validation checks, cross-checks with original data sources, and automated data quality rules to ensure higher accuracy of data.

Security is paramount, especially for sensitive or proprietary information, and the project must follow all security standards and practices to protect data from unauthorized access. Key actions include role-based access control, data encryption protocols, and compliance with data privacy regulations.

Compatibility is essential, with the dashboard working seamlessly across various platforms and devices. System monitoring, error logging, and stress tests are key actions to ensure the dashboard

remains operational and accessible throughout the project's lifecycle. Flexibility is key to ensuring the solution can adapt to changing business requirements, data sources, or visualizations in the future.

By applying these strategies, the "Brewing Smart Power BI Solution" project will achieve both business and technological quality criteria. Functional measurements ensure that the solution meets business requirements, whereas nonfunctional requirements such as performance, security, and reliability ensure that the solution is efficient, secure, and scalable. Each of these areas will be constantly checked, and any necessary changes will be made to ensure high-quality deliveries at each stage of the project.

## **5.5 Project Monitoring and Control**

Project monitoring and control are key functions for ensuring that the "Brewing Smart Power BI Solution" remains on schedule, within scope and budget, and meets the required quality. Monitoring and control activities include evaluating progress regularly, assessing project metrics, discovering discrepancies, and executing corrective steps to ensure the project's success.

### **1. Scope Monitoring and Control**

Scope monitoring is crucial in ensuring project deliverables align with the defined scope, preventing scope creep, and ensuring timely completion. Key actions include scope verification, change control, and scope baseline reviews. Continuous checks are performed to ensure each deliverable aligns with the project's objectives and WBS. Change requests are logged in the Change Request Log, evaluated for impact on time, cost, and resources. Scope reviews are conducted after each project milestone to verify the original scope. Tools used for monitoring scope include the WBS, Change Request Log, and monitoring frequency.

### **2. Schedule Monitoring and Control**

Schedule monitoring is crucial for ensuring a project's progress aligns with the project timeline. Key actions include visualizing the timeline using a Gantt chart, providing weekly task progress updates, and closely monitoring critical path tasks. The chart will display each task's dependencies, providing a clear overview of the project's critical path. Tools like Miro, Asana will be used to track individual tasks and milestones, providing a detailed view of the project schedule. Daily tracking of critical path tasks and weekly schedule reviews with the project team are also essential.

### **3. Risk Monitoring and Control**

Risk control is crucial in managing identified risks throughout a project's lifecycle. Key actions include regular updates to the Risk Register, weekly reviews to assess risk status, and adjustments to the risk response plan if risk likelihood or impact changes. Tools used include a comprehensive risk log, a risk matrix, and weekly reviews, with continuous monitoring of high-priority risks. Regular updates ensure effective mitigation strategies are developed and implemented.

## **5.6 Lessons Learnt**

This section highlights what worked well, areas for improvement, and recommendations for future projects, with the aim of continuously improving project planning, data analysis, stakeholder engagement, and solution implementation. These lessons will serve as a valuable resource for future waste reduction initiatives and similar data-driven projects.

### **1. Project Planning & Scope**

- What went well: Clearly defining the scope early helped maintain focus on reducing food waste by 15%. The project objectives were specific and measurable, ensuring alignment with the cafe's goals.
- Areas for improvement: The initial timeline was ambitious, and adjustments were needed along the way. In future projects, more buffer time should be included for unanticipated delays, especially during data collection phases.

### **2. Data Collection & Quality**

- What went well: Having a structured system to gather food waste data daily proved to be highly effective. The use of digital records and staff cooperation made data collection smoother.
- Challenges: Data inconsistencies occurred early on due to variations in how waste was recorded. Future projects should include a more detailed training session for staff on standardized data collection methods.

### **3. Power BI Dashboard Development**

- What went well: Power BI proved to be an excellent tool for visualizing data, offering interactive dashboards that allowed the cafe's management to explore waste metrics. The tool presented information in a clear and actionable format, helping them make informed decisions to reduce

food waste effectively.

- Challenges: Some of the data transformations required were more complex than initially anticipated, causing delays in dashboard development. It would be beneficial to allocate more time for data preparation and to involve technical experts earlier in the process.

#### 4. Stakeholder Engagement

- What went well: Regular updates and check-ins with Day Break Cafe management kept the project on track and ensured that any concerns were addressed promptly. Collaboration with the project team (PM, BA, and tech lead) was also smooth.
- Challenges: There were occasional miscommunications about the level of detail required for certain reports. In future projects, establishing clear communication protocols and expectations early on would help avoid these issues.

#### 5. Future Considerations

- Improvements for the future: In future iterations of waste reduction efforts, automating some data collection processes might save time and reduce errors. Additionally, expanding the dashboard to include predictive analytics could help the cafe anticipate future waste trends.

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