**TECHNICAL REPORT ON TASK 46 A (ADRIOT INVESTMENT COMPANY ANALYSIS)**

1. **PROJECT OVERVIEW**

This end-to-end analytics project was developed for Adriot Investment Limited to enhance financial oversight and budget compliance across its departments and ongoing projects. The objective was to create a data-driven budgeting analysis framework that could proactively identify financial risks and support more informed budgetary planning.

The project focused on delivering interactive visualizations and strategic insights by integrating multiple data sources, such as employee records, departmental budget allocations, salary expenses, and project cost details. By doing so, the dashboard empowered stakeholders to monitor, assess, and act on budget utilization in near real-time.

**OBJECTIVES**

The primary objectives of this project were to:

* Create visualizations using SQL queries to highlight projects and departments within ADRIOT INVESTMENT LIMITED that are at risk of exceeding or falling below their budget.
* Demonstrate the structure of various data sources, including employee information, salary data, department budgets, and project details.
* Assess whether each department's one-year budget allocation can sufficiently cover expenses, given that departmental budgets are set at two-year intervals.

1. **DEVELOPING SQL QUERIES:**

A database named ADRIOT LIMITED ANALYSIS DATABASE was created using PostgreSQL. The following tables were designed within the database using datasets obtained from the YouTube video:

1. **Employees Table:** This table was created using the SQL CREATE TABLE statement. It contains employee information with the following fields: employee id, first name, last name, email, job title, salary, hire date, and department id.

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AI-generated content may be incorrect.**

1. **Department Table:** This table was created using the SQL CREATE TABLE statement. It contains department information with the following fields: department id, department name, department budget, Head of department, number of employees, department goals, and location.

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1. **Project Assignment Table:** This table was created using the SQL CREATE TABLE statement. It contains project assignment information with the following fields: assignment ID, employee ID, and project ID.

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1. **Completed Project Table:** This table was created using the SQL CREATE TABLE statement. It contains completed project information with the following fields: project ID, project name, project budget, project start date, project end date, and department id.

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1. **Head Shots Table:** This table was created using the SQL CREATE TABLE statement. It contains the image URL of the employees and the employees’ IDs.

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1. **Upcoming Project Table:** This table was created using the SQL CREATE TABLE statement. It contains upcoming project information with the following fields: project ID, project name, project budget, project start date, project end date, department id, and project lead.

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1. **Project Table:** This table was created using the SQL CREATE TABLE statement. It contains project information with the following fields: project ID, project name, project budget, project start date, project end date and department id.

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The values from the corresponding dataset were imported into the tables based on their

respective names using the binary path address.

1. **Project Status 2 Table:** This table was created using the CREATE TABLE combining the completed projects and upcoming projects table using the UNION STATEMENT. Important common fields from both tables were selected to form the Project\_Status2 table. A Status field was added to this table to indicate the status of each project, distinguishing between completed and upcoming projects. It contains project information with the following fields: project id, project name, project budget, and status.

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1. **Main Query Table:** This table was created using the CREATE TABLE statement. It combines data from the Employee, Department, Project Assignment, and Project\_Status2 tables using the JOIN statement. This table provides comprehensive and important information from the four tables, which is essential for visualizing the project. It serves as the main table for the Power BI dashboard.

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1. **POWER BI VISUAIZATION:**

All the tables created in the SQL were exported and loaded into the Power BI; this was used to create an interactive dashboard that was able to the objectives of this project.

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This dashboard is designed to provide insights into project budgets, departments that are over budget or underperforming, costs, and employee details:

1. **Employee Information Panel (Left Section):** Employment ID Dropdown: Allows the user to select an employee ID to display individual employee details.

* Passport Photo: Displays the selected employee’s photo for easy identification.
* First Name / Last Name: Displays the employee's full name (e.g., Taylor Emma).
* Department Name: Displays the employee's assigned department (e.g., Marketing).
* Job Title: This shows the employee's position (e.g., Marketing Manager).
* Salary: Displays the employee's salary (e.g., $78K).

1. **Project Budget by Month (Top Center Chart):** This line chart tracks the project budget trends over specific months.

**Key Observations:**

* January: The budget is around 60K.
* February: A slight decrease to 45K.
* March: The budget peaks at 70K.
* June: The Budget dips again to 50K.
* September ends with another increase to 60K.

This chart helps visualize budget fluctuations throughout the year.

**3. Project Cost by Department Name (Top Right Chart):** A **donut chart** representing the total project costs categorized by department.

* The total capital spent is **$1.29M**.
* Each department's budget is highlighted:
  + **Sales:** $150K
  + **Marketing:** $115K
  + **Engineering:** $110K
  + **Human Resources:** $105K
  + **IT:** $90K

This chart quickly shows that the sales departments have the highest budget, while IT has the lowest.

**4. Project Budget by Department Name (Middle Left Chart):** A **bar chart** displaying the project budgets for each department.

* The values are:
  + **Sales:** 150K
  + **Marketing:** 115K
  + **Engineering:** 110K
  + **Human Resources:** 105K
  + **IT:** 90K
* This provides a clear visual comparison of department-wise budgets. Sales has the highest project budget, and IT has the lowest project budget.

**5. Project Budget by Project Status (Middle Center Chart):** A **doughnut chart** displaying the total project budget split by project status:

* + **Completed Projects:** $365K
  + **Upcoming Projects:** $205K
* The total budget is **570K**.

This breakdown shows the proportion of resources allocated to completed vs. upcoming projects. The completed projects carry the highest budget.

**6. Project Budget by Project Name (Middle Right Chart)**

* A **bar chart** displaying budget allocations for various project names:
  + **Product Launch:** 80K
  + **Brand Report:** 70K
  + **Mobile App Development:** 70K
  + **New Marketing Campaign:** 60K
  + **Website Overhaul:** 55K
  + **Customer Service Training:** 55K
  + **CRM Integration:** 50K
  + **SEO Optimization:** 50K
* This chart identifies which projects are the most resource-intensive.

**7. Department Goals and Cost Table (Bottom Section):** This detailed table summarizes each department's objectives and related costs:

* **Department Name:** Lists various departments.
* **Department Goals:** Outlines key goals like product development, employee engagement, etc.
* **Project Cost:** The cost allocated for each department’s specific goals.
* **Salary Cost:** The salary expenditure for each department.
* **Budget:** The total budget set aside for that department.
* **2-Year Budget:** An extended budget view for future planning.
* **Capital:** Displays available or remaining capital after costs.

**8. Filters (Top Right)**

* **Project Status Filter:** Allows filtering data by project status (e.g., completed, upcoming).
* **Department Name Filter:** Allows filtering data by specific departments.

**METHODOLOGY**

**1. Requirement Gathering:** Collaborated with finance and operations teams to define key objectives: track budget compliance, identify financial risks, and assess long-term sufficiency.

**2. Data Collection & Preparation:**

* Integrated data from multiple sources: employee records, salary data, department budgets, and project costs.
* Cleaned and structured data using SQL for consistency and accuracy.

**3. Data Modeling & Analysis:**

* Developed SQL queries to calculate key KPIs:
* Budget Utilization (%)
* Overrun Risk Flags
* Budget Sufficiency Scores
* Normalized and joined datasets for department- and project-level insights.

**4. Dashboard Development:**

Created interactive dashboards using Power BI with:

* Visual risk indicators for departments/projects.
* Drill-downs by department, time period, and budget category.
* Heatmaps and scorecards for quick decision-making.

**KEY INSIGHTS AND OBSERVATIONS**

**1. Monthly Project Budget Fluctuation:**

* March records the highest budget utilization (80K), while February has the lowest (45K).
* The data reveals irregular budget distribution, with sharp rises and dips between months.

Interpretation:

This suggests a lack of consistent project rollout or unplanned expenditures occurring during peak months.

**2. Departmental Budget vs. Capital Utilization:**

* Sales: Highest departmental cost at $150K; remains financially healthy with $116K capital.
* Marketing: Costs $115K; maintains a positive capital of $369K, indicating efficient budget use.
* Human Resources: Spends $105K but runs a capital deficit of ($25K), indicating overspending.
* Engineering: Strong capital balance ($770K) despite substantial spending ($110K).
* IT: Lowest expenditure ($90K) and low capital ($58K).

Interpretation:

Engineering is over-funded relative to current spending, while HR’s overspending could suggest uncontrolled or underestimated expenses. IT may be underfunded, risking infrastructure degradation.

**3. Project Status Distribution:**

* **Completed Projects: 365K of the total budget (64%)**
* Upcoming Projects: 205K (36%)

Interpretation:

A healthy portion of the budget is allocated to completed work, but it’s crucial to monitor whether completed project budgets matched planned estimates.

**4. Top Projects by Budget:**

* Product Launch leads with 80K, followed by Brand Repositioning and Mobile App at 70K each.
* CRM Integration and SEO Optimization receive lower allocations (50K), suggesting secondary strategic importance.

Interpretation:

Focus is on customer engagement and digital transformation. However, projects related to operations (CRM, SEO) may need reevaluation for sufficient resource allocation.

**5. Department Goals & Project Alignment:**

* Sales: “Boost Sales” – aligned with the highest project funding.
* Marketing: “Increase Brand Awareness” – well-funded.
* HR: “Enhance Employee Engagement” – capital deficit suggests misalignment between goal ambition and funding.
* IT: “Improve Infrastructure” – underfunded considering importance.

Interpretation:

Strategic goals are broadly aligned with budgets, but funding inconsistencies could hinder goal achievement, particularly in HR and IT.

**RECOMMENDATIONS**

1**. Enforce Consistent Budget Phasing:**

* Introduce quarterly planning to distribute project funds more evenly and avoid large spikes like in March.
* Implement budget reforecasting tools to adapt in real-time to project delays or accelerations.

Impact: Improves predictability and prevents month-end cash flow strain.

**2. Rebalance Departmental Capital Allocation:**

* Reduce surplus in Engineering and reallocate part to HR and IT.
* Ensure HR gets appropriate funding to avoid further deficits and preserve employee satisfaction initiatives.
* Boost IT investment to support long-term digital infrastructure.

Impact: Optimizes use of resources across strategic units and prevents stalling of crucial operations.

**3. Review Project Execution Costs:**

* Analyze completed project budgets vs. actual outcomes to identify patterns of overspending.
* Use this data to refine project estimation models and increase accuracy.

Impact: Enhances accountability and improves future cost projections.

**4. Enhance Monitoring of Goal-Budget Alignment:**

* Develop a goal-tracking dashboard that connects budget utilization directly to goal progress metrics (e.g., employee satisfaction, sales growth, brand engagement).
* Flag departments where capital usage does not correlate with performance outcomes.

Impact: Ensures ROI-based budgeting and reduces wasteful expenditure.

**5. Invest in Underfunded Strategic Areas:**

* Projects like CRM Integration and SEO Optimization are critical for data-driven marketing and digital presence but are under-resourced.
* Consider incremental funding based on performance triggers (e.g., user engagement metrics).

Impact: Strengthens digital transformation and competitive edge.

**CONCLUSION**

This dashboard provides a centralized view for project tracking, budget management, and employee details. It effectively highlights key financial metrics, ensuring that decision-makers can analyze costs, track performance, and allocate resources efficiently. It reveals both strengths and weaknesses in budget management. While Engineering shows strong capital control, Human Resources requires immediate action to manage its deficit. By redistributing funds, improving forecasting, and tracking project milestones more effectively, Adroit Investment Limited can achieve greater financial stability and project efficiency.

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