**Project Report**

# 1. Project Title

**Market Basket Analysis & Store Optimization**

# 2. Project Summary

**To discover purchasing patterns and frequently co-occurring items in customer transactions using Market Basket Analysis techniques.**

# 3. Project Objectives

* Product placement optimization
* Cross-selling and up-selling strategies
* Personalized promotions and discounts
* Inventory and supply chain planning

# 4. Team Members

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| --- | --- | --- |
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| Name –Aishal Jain  Name – Arpit Sahu  Name – Aman Sharma  Name –Muthyam Sridhar  Name – Nikhil Ahirwa  Name – Anand Kumar | Role – Data cleaning in python + Association Rule Mining  Role - SQL Analyst +  SKU Analysis, Stock Optimization Queries  Role - Power BI Dashboard  Apriori Model + Association Rule Mining  Data Cleaning in Python/Excel  Insights & Recommendations |  |

# 5. Team Name

**“Sadaiv Aage”**

# 6. Challenges & Risks

**Data Quality:** Inconsistent or duplicate entries may affect results.  
*Mitigation:* Clean and standardize data using Power Query.

**Complexity:** Non-technical users may find the model confusing.  
*Mitigation:* Provide clear documentation and simplified views

**Data Quality Issues** : In Python, incorrect types or NULLs can crash scripts. Mitigation :- In SQL, use COALESCE, IS NULL checks, and data constraints.

**Security & Access Control** : Python scripts or SQL queries may expose credentials (e.g., in connection strings). Mitigation : Set up role-based access control (RBAC) in SQL databases.

# 7. Conclusion / Recommendations

* Successfully gained hands-on experience in data analytics through academic projects and internships.
* Developed strong proficiency in tools like **Power BI, Python (Pandas, NumPy), SQL, and Excel**.
* Analyzed real-world datasets (Amazon Sales, IPL, Retail Orders) and provided actionable insights through dashboards and visualizations.
* Applied statistical techniques for data cleaning, transformation, and interpretation.
* Proven ability to identify patterns, trends, and optimization opportunities in business data.

# Recommendations

* Continue deepening expertise in **advanced analytics tools** such as Python (scikit-learn), Tableau, and R.
* Strengthen understanding of business domains (e.g., retail, sports, e-commerce) to derive more domain-specific insights.
* Enhance **communication and storytelling** skills to present data findings effectively to stakeholders.
* Pursue real-time industry projects or certifications in **machine learning** or **data engineering**.
* Keep building a strong online portfolio (e.g., GitHub, LinkedIn) with diverse analytics projects and dashboards.