



IIT MADRAS ONLINE BS DEGREE PROGRAM INDIAN INSTITUTE OF TECHNOLOGY, MADRAS PRESENTATION FOR THE BDM CAPSTONE PROJECT

**LEVERAGING DATA ANALYTICS FOR OPTIMISING INVENTORY LEVELS AND
ENHANCING THE OVERALL SUSTAINABILITY PRACTICES**

**SELVAMANI STORE,
TIRUNELVELI DISTRICT,
TAMILNADU - 627006.**

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PROBLEM STATEMENTS AND SOLUTION APPROACHES

PROBLEM STATEMENT 1:
OPTIMISING INVENTORY LEVELS

DATA: INVENTORY, SALES, PURCHASES
METHODS: ABC ANALYSIS, INVENTORY TURNOVER ANALYSIS

PROBLEM STATEMENT 2:
ENHANCING THE OVERALL SUSTAINABILITY PRACTICES

DATA: CUSTOMER DEMOGRAPHICS, PREFERENCES, FEEDBACK
METHODS: RFM ANALYSIS, MARKET BASKET ANALYSIS

ABC ANALYSIS

ABC ANALYSIS IS A METHOD FOR CATEGORIZING SKUs BASED ON THEIR RELATIVE IMPORTANCE TO THE BUSINESS.

THE GOAL IS TO HELP THE BUSINESS OWNER PRIORITIZE THEIR RESOURCES AND FOCUS ON THE SKUs THAT HAVE THE BIGGEST IMPACT ON REVENUE AND PROFITABILITY.

ABC ANALYSIS HELPS CATEGORIZE INVENTORY INTO THREE CATEGORIES WHICH ARE:

CATEGORY A (HIGH VALUE SKUs):

SKUs IN THIS CATEGORY CONTRIBUTE TO A SIGNIFICANT PORTION OF TOTAL PROFIT OR REVENUE.

GROUNDNUT OIL, TOOR DAL, SUGAR

CATEGORY B (MEDIUM VALUE SKUs):

SKUs IN THIS CATEGORY CONTRIBUTE MODERATELY TO THE TOTAL PROFIT OR REVENUE.

COCONUT OIL, CHOCOLATES, BATHROOM CLEANER, MOONG DAL, MILK, CHANNA DAL, SUNFLOWER OIL

CATEGORY C (LOW VALUE SKUs):

SKUs IN THIS CATEGORY CONTRIBUTE MINIMALLY TO TOTAL PROFIT OR REVENUE.

RICE, PALM JAGGERY, GINGELLY OIL, CURD, PULSES, JAGGERY, SALT

INVENTORY TURNOVER ANALYSIS

INVENTORY TURNOVER ANALYSIS HELPS TO UNDERSTAND HOW EFFICIENTLY THE INVENTORY IS BEING MANAGED.

THE GOAL IS TO HELP THE BUSINESS OWNER TO DETERMINE THE RIGHT AMOUNT OF STOCK TO KEEP ON-HAND TO FILL DEMAND WHILE AVOIDING SPENDING TOO MUCH ON INVENTORY STORAGE.

INVENTORY TURNOVER ANALYSIS HELPS CATEGORIZE INVENTORY INTO THREE CATEGORIES WHICH ARE:

HIGH TURNOVER PRODUCTS:

SKUs IN THIS CATEGORY ARE FAST SELLING & HIGH REVENUE GENERATING.

**TOOR DAL, SUGAR,
CHOCOLATES**

BALANCED TURNOVER PRODUCTS:

SKUs IN THIS CATEGORY ARE STEADY & THEIR INVENTORY SHOULD BE MONITORED REGULARLY.

**MOONG DAL, CHANNA DAL,
SUNFLOWER OIL, COCONUT
OIL, BATHROOM CLEANER**

LOW TURNOVER PRODUCTS:

SKUs IN THIS CATEGORY ARE TO BE IMPROVE THEIR TURNOVER & PROFITABILITY

**RICE, PALM JAGGERY,
GINGELLY OIL, CURD, PULSES,
JAGGERY, SALT, GROUNDNUT
OIL**

INTERPRETATIONS OF ABC AND INVENTORY TURNOVER ANALYSIS



RFM ANALYSIS

RECENCY, FREQUENCY, AND MONETARY VALUES ARE CRUCIAL FOR UNDERSTANDING CUSTOMER BEHAVIOR.

RFM (RECENCY, FREQUENCY, MONETARY) ANALYSIS IS A METHOD USED TO EVALUATE CUSTOMER BEHAVIOR BY ANALYZING THE FOLLOWING:

HOW RECENTLY A CUSTOMER MADE A PURCHASE (RECENCY)

ALL THE PURCHASES MADE BY THE CUSTOMERS ARE RECENT ONES (25 JUNE 2024 TO 25 JULY 2024).

HOW OFTEN THEY MAKE PURCHASES (FREQUENCY)

FREQUENCY IS A KEY METRIC AS IT SHOWS HOW DEEPLY A CUSTOMER IS ENGAGED WITH THE SHOP.

HOW MUCH MONEY THEY SPEND (MONETARY)

IN THIS CASE, MONETARY DATA IS UNAVAILABLE, SO FOCUS CAN BE PLACED ON RECENCY AND FREQUENCY.

MARKET BASKET ANALYSIS

MARKET BASKET ANALYSIS IDENTIFIES ASSOCIATIONS BETWEEN PRODUCTS THAT CUSTOMERS FREQUENTLY BUY TOGETHER. IT HELPS UNDERSTAND PRODUCT ASSOCIATIONS AND CUSTOMER BUYING PATTERNS.

BASED ON THE FREQUENCY OF THE PRODUCTS BOUGHT TOGETHER, BUNDLE OFFERS, DISCOUNTS AND COMBO DEALS CAN BE INTRODUCED.

PRODUCTS WHICH ARE COMMONLY PURCHASED TOGETHER CAN BE MOVED TO A SEPARATE SECTION IN THE SHOP, CALLED "STAPLE ESSENTIALS".

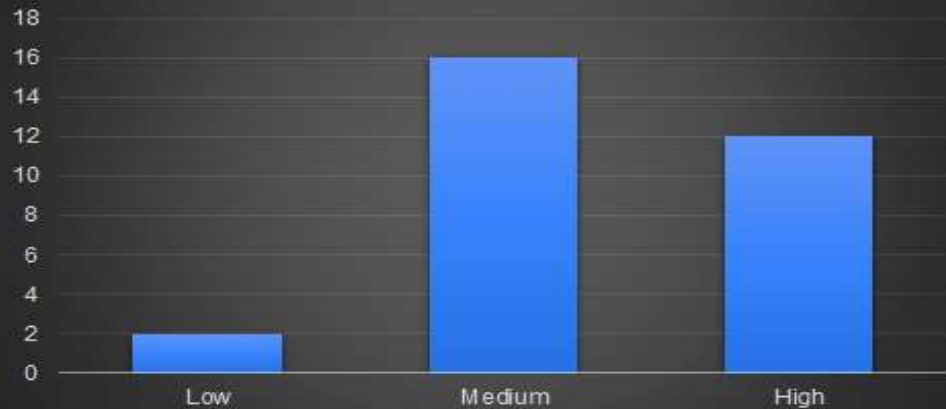
USING THE INSIGHTS GAINED FROM PRODUCT ASSOCIATIONS, TARGETED MARKETING CAMPAIGNS CAN BE STARTED.

THE PRODUCTS BOUGHT FREQUENTLY WERE:

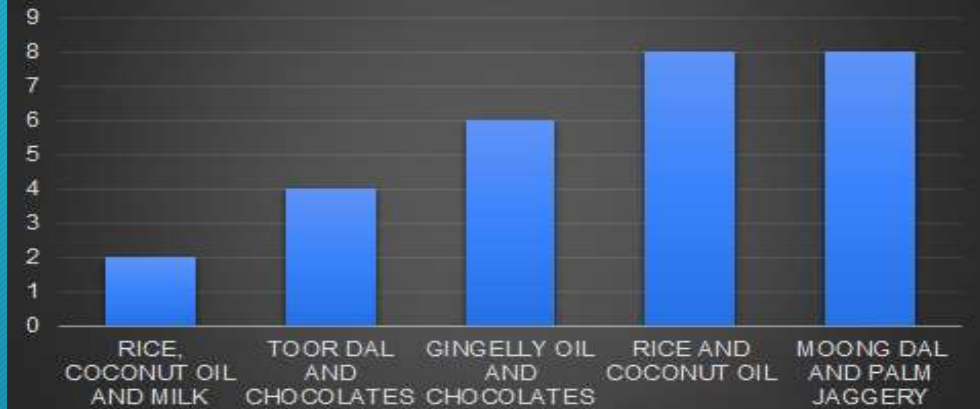
- **MOONG DAL AND PALM JAGGERY**
- **TOOR DAL AND CHOCOLATES**
- **RICE, COCONUT OIL AND MILK**
- **GINGELLY OIL AND CHOCOLATES**

INTERPRETATIONS OF RFM AND MARKET BASKET ANALYSIS

FREQUENCY OF CUSTOMERS



PRODUCT ASSOCIATIONS



RATING PROPORTIONS



RECOMMENDATIONS FOR OPTIMISING INVENTORY LEVELS

FOCUS ON CATEGORY A SKUs:

TO MAXIMIZE PROFIT, THE BUSINESS SHOULD PRIORITIZE INVENTORY MANAGEMENT AND SALES STRATEGIES AROUND GROUNDNUT OIL, TOOR DAL, AND SUGAR.

REVIEW CATEGORY B SKUs:

THESE ITEMS HAVE POTENTIAL BUT MAY NEED BETTER PRICING STRATEGIES OR PROMOTIONAL EFFORTS TO INCREASE THEIR CONTRIBUTION TO TOTAL PROFIT.

RE-EVALUATE CATEGORY C SKUs:

THESE ITEMS EITHER HAVE LOW OR NEGATIVE PROFITABILITY DESPITE VARYING LEVELS OF REVENUE CONTRIBUTION. CONSIDER DISCONTINUING OR ADJUSTING THE PRICING, SOURCING, OR MARKETING STRATEGIES FOR THESE PRODUCTS.

OPTIMIZE INVENTORY TURNOVER:

THE ANALYSIS SUGGESTS THE NEED TO BALANCE HIGH-REVENUE ITEMS WITH HIGH-PROFIT ITEMS. SOME PRODUCTS WITH NEGATIVE PROFIT BUT HIGH REVENUE MAY NEED COST OPTIMIZATION OR BETTER SALES STRATEGIES.

RECOMMENDATIONS FOR ENHANCING SUSTAINABILITY PRACTICES

PROMOTE SUSTAINABILITY PACKAGING:

USE THE FREQUENCY DATA TO FOCUS ON HIGH AND MEDIUM FREQUENCY CUSTOMERS WITH CAMPAIGNS PROMOTING SUSTAINABLE PACKAGING. OFFER INCENTIVES FOR ECO-FRIENDLY PRACTICES.

ENCOURAGE LOCAL PRODUCTS:

BASED ON CUSTOMER PREFERENCES, EMPHASIZE LOCAL PRODUCTS IN MARKETING EFFORTS. THIS SUPPORTS LOCAL SUPPLIERS AND REDUCES THE STORE'S CARBON FOOTPRINT.

IMPROVE CUSTOMER EXPERIENCE:

ADDRESS FEEDBACK RELATED TO STORE EXPERIENCE AND PRODUCT VARIETY. IMPLEMENT CHANGES TO ENHANCE THE SHOPPING EXPERIENCE AND ADDRESS COMMON CONCERNS.

LEVERAGE LOYALTY PROGRAMS:

DEVELOP AND PROMOTE LOYALTY PROGRAMS THAT REWARD FREQUENT SHOPPERS. INCORPORATE SUSTAINABILITY INCENTIVES TO ALIGN WITH THE STORE'S ECO-FRIENDLY GOALS.