CASE STUDY PYTHON

CATALOG CROSS SELLING
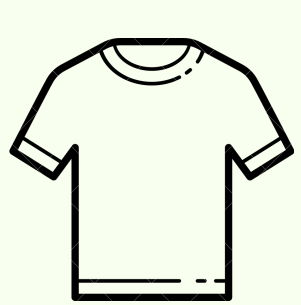
An implementation of Affinity Analysis &
Apriori Algorithm

KEY POINTS TO COVER

- **Introduction & Objective**
- **Solution Approach**
- **Scenarios**
- **Recommendations**
- **Measures of Success**

INTRODUCTION

Exeter, Inc. is a catalog firm that sells products in a number of different catalogs that it owns. There are nine catalog categories :
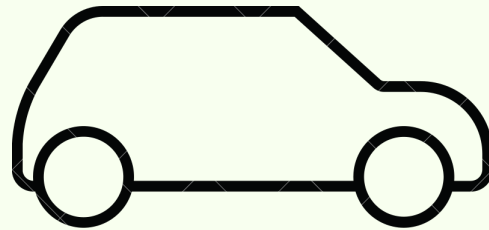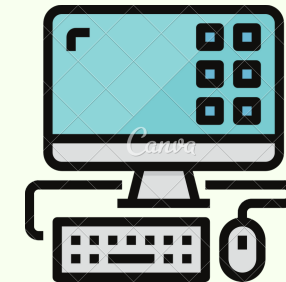
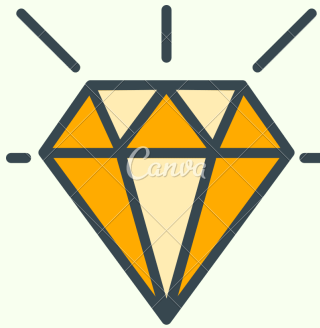**Clothing**   **Houseware**   **Health**   **Automotive**   **Electronics**   **Computers**   **Garden**   **Novelty gift**   **Jewellery**

OBJECTIVE

OUR FOCUS

Find out what to cross sell?

SOLUTION APROACH

FREQUENT ITEMSETS

F

Find items that are are purchased together atleast 5% of the times in most transactions

Minsup = 0.05

ASSOCIATION RULES BY CONFIDENCE

Form rules based on confidence assuming that Item Y is purchased 50% of the times given that Item X has already been purchased

Min Threshold = 0.5

FILTERING RESULTS BY LIFT

Sort the rules in descending order based on Lift. Assuming Lift >=1, means that Item Y is as likley to be purchased as Item X provided the latter has been already bought

Lift >=1

ANALYZE & RECOMMEND

Analyze 3 scenarios with 2 minimum consequents and provide recomendations based on them

Consequents >=2

SCENARIOS & RECOMMENDATIONS

- CUSTOMER BUYS 1, EXETER CROSS-SELLS 2 (CAMPAIGN B1C2)

- CUSTOMER BUYS 2, EXETER CROSS-SELLS 2 (CAMPAIGN B2C2)

- CUSTOMER BUYS 3, EXETER CROSS-SELLS 2 (CAMPAIGN B3C2)

CUSTOMER BUYS 1, EXETER CROSS-SELLS 2 (CAMPAIGN B1C2)

- Items purchased together atleast 9% of the times are shown on the left. Two Itemset which are most popular are:

  1. Electronics, Houseware & Health Products
  2. Jewellery, Houseware & Health Products

- Health Products & Electronics are purchased atleast 60% of the times or they are 1.3 times are more likely to be bought given the following items have been already purchased:
  1. Novelty Gifts
  2. Automotive
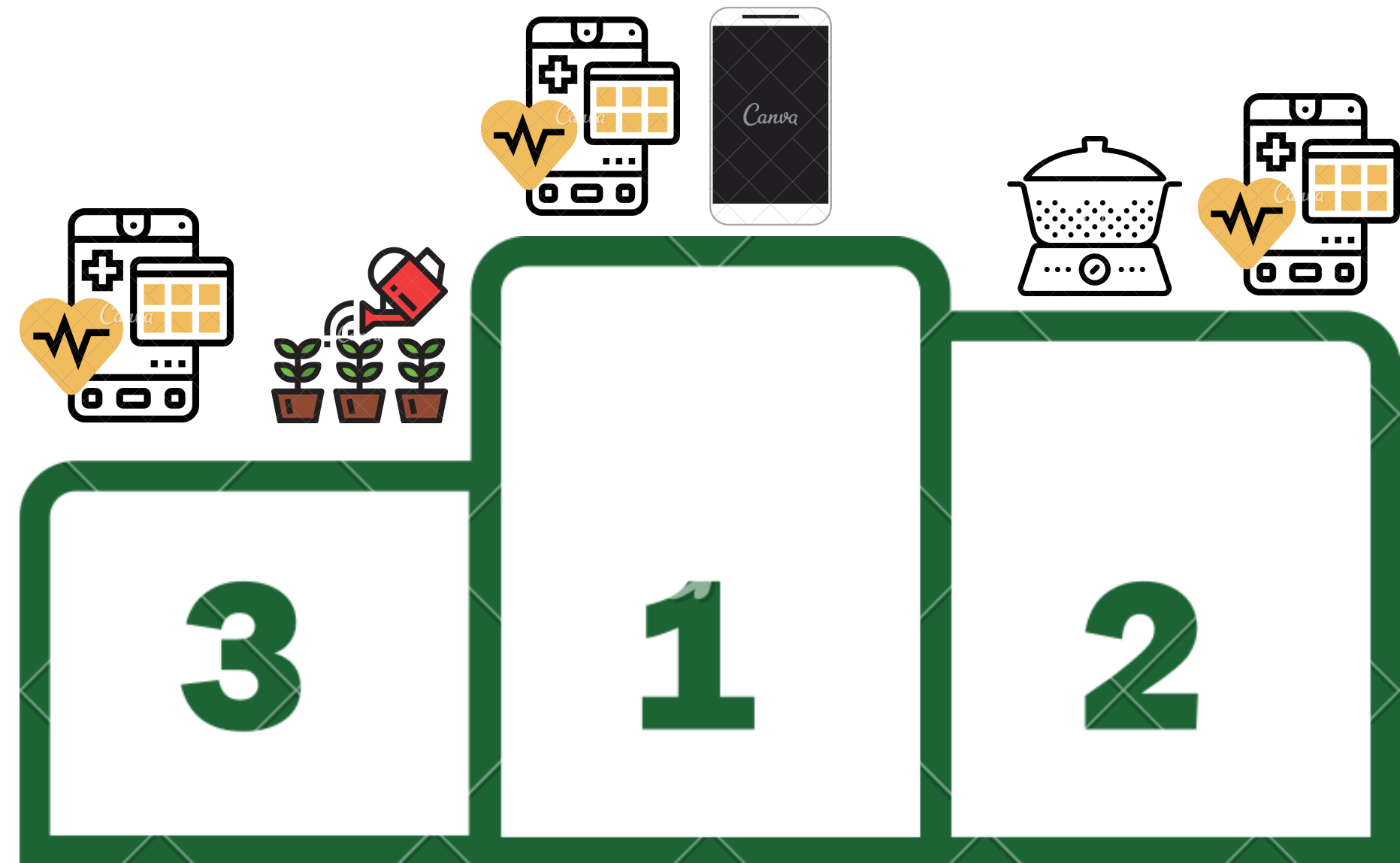 3. Garden Products
  4. Houseware

(CAMPAIGN B1C2)

RECOMMENDATION

Email or ship discount coupons for the following catalogs together:

- **Health Products & Electronics**

- **Health & Houseware Products**

- **Health Products & Garden Products**

CUSTOMER BUYS 2, EXETER CROSS-SELLS 2 (CAMPAIGN B2C2)

- Items purchased together atleast 6% of the times are shown on the left. Two Itemset which are most popular are:
  1. Electronics, Novelty Gifts, Garden & Health Products
  2. Houseware, Novelty Gifts, Garden & Health Products

- Health Products & Garden Products are purchased atleast 50% of the times or they are twice more likely to be purchased when the following combos have already been purchased:
  1. Automobile & Electronics,
  2. Jewellery & Novelty Gifts,
  3. Electronics & Novelty Gifts,
  4. Houseware & Novelty Gifts

(CAMPAIGN B2C2)

RECOMMENDATION

Customers who buy 2 products can be sent discount
coupons from the following 2 catalogs.
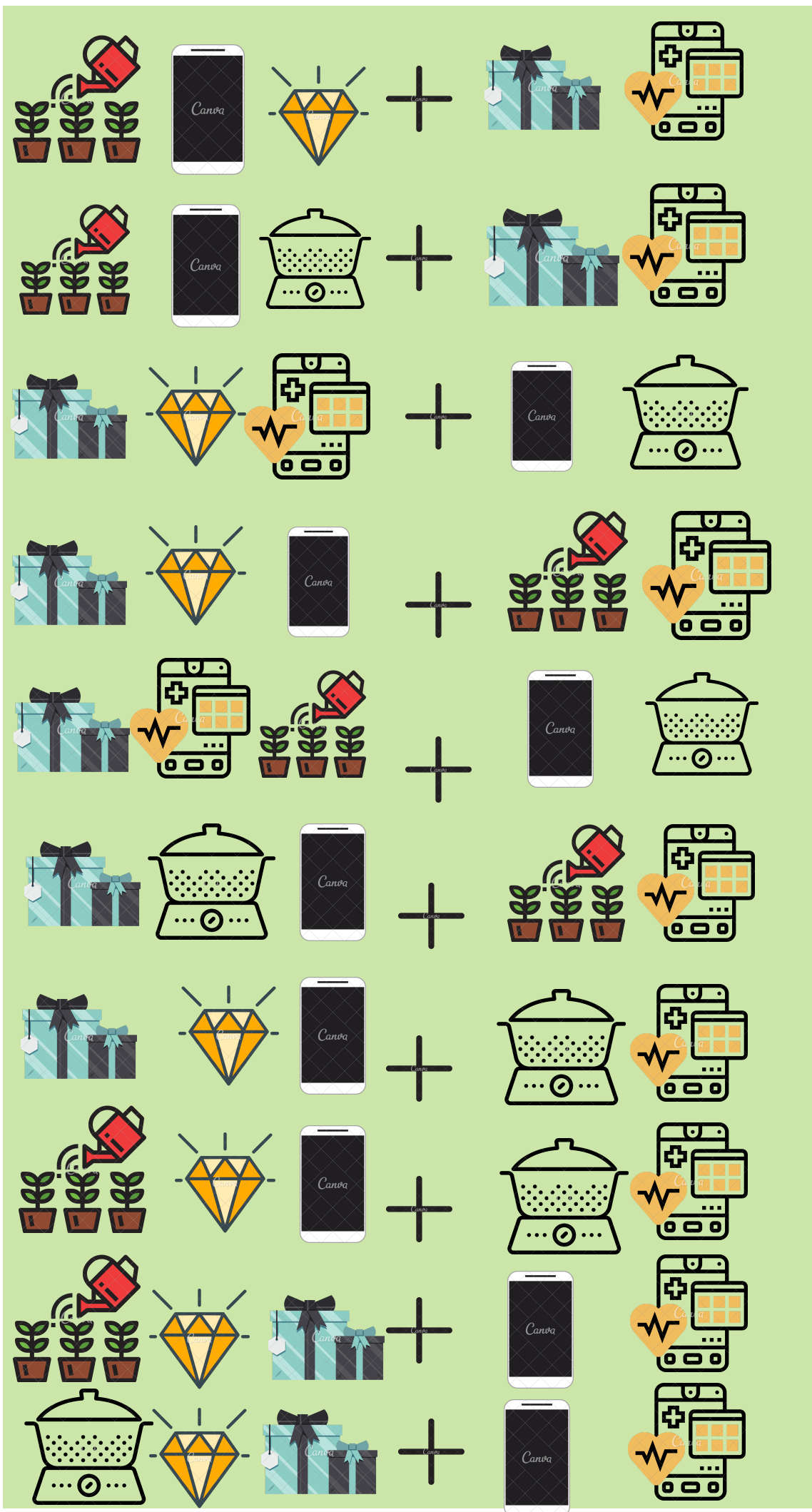
(Arranged from most sale- inducing to the least):

- **Health & Garden Products**
- **Houseware & Electronics**
- **Health & Novelty Gifts**

CUSTOMER BUYS 3, EXETER CROSS-SELLS 2 (CAMPAIGN B3C2)

- Items purchased together atleast 5.3% of the times are shown on the left. Two Itemset which are most popular are:
  1. Novelty Gifts, Health Products, Electronics & Houseware, Jewellery
  2. Novelty Gifts, Health Products, Electronics, Houseware & Garden Products

- Novelty Gifts & Health Products are 2.5 twice more likely to be purchased when the following combos have already been bought:
  1. Garden Products, Electronics & Jewellery
  2. Garden Products, Electronics & Houseware

(CAMPAIGN B3C2)

RECOMMENDATION

Customers who buy 3 products can be sent discount
coupons from the following 2 catalogs together.
(Arranged from most sale-inducing to the least):

- **Novelty Gifts & Health Products**
- **Houseware & Electronics**
- Garden & Health Products

MEASURES OF CAMPAIGN SUCCESS

Compare the following for 3 campaigns
(On 31st Dec' 2020)

Return on Investment (ROI): Sales revenue a campaign brings on every dollar spent

Cost per Win (Sale): It measures the expense of each sale

Conversion Rate: Percentage of targeted audience who have converted into leads or customers

Incremental Sales: Measures the contribution of marketing efforts toward the sales numbers
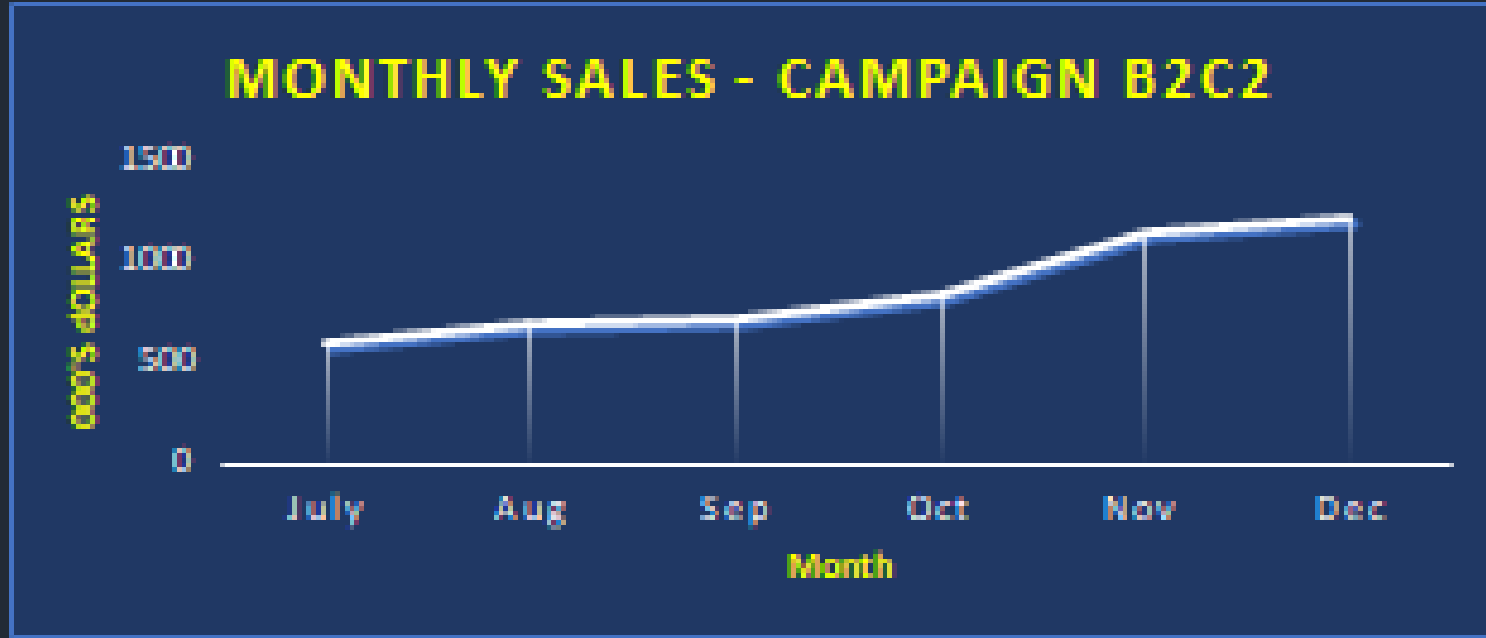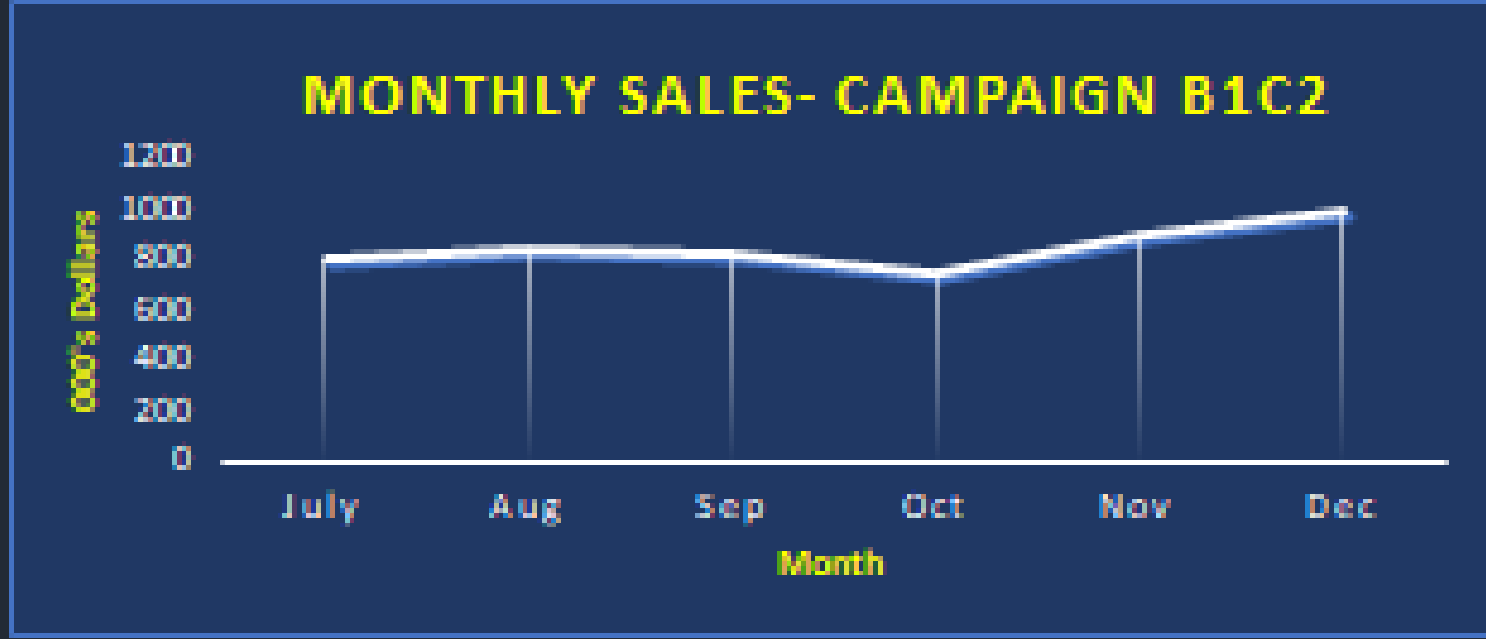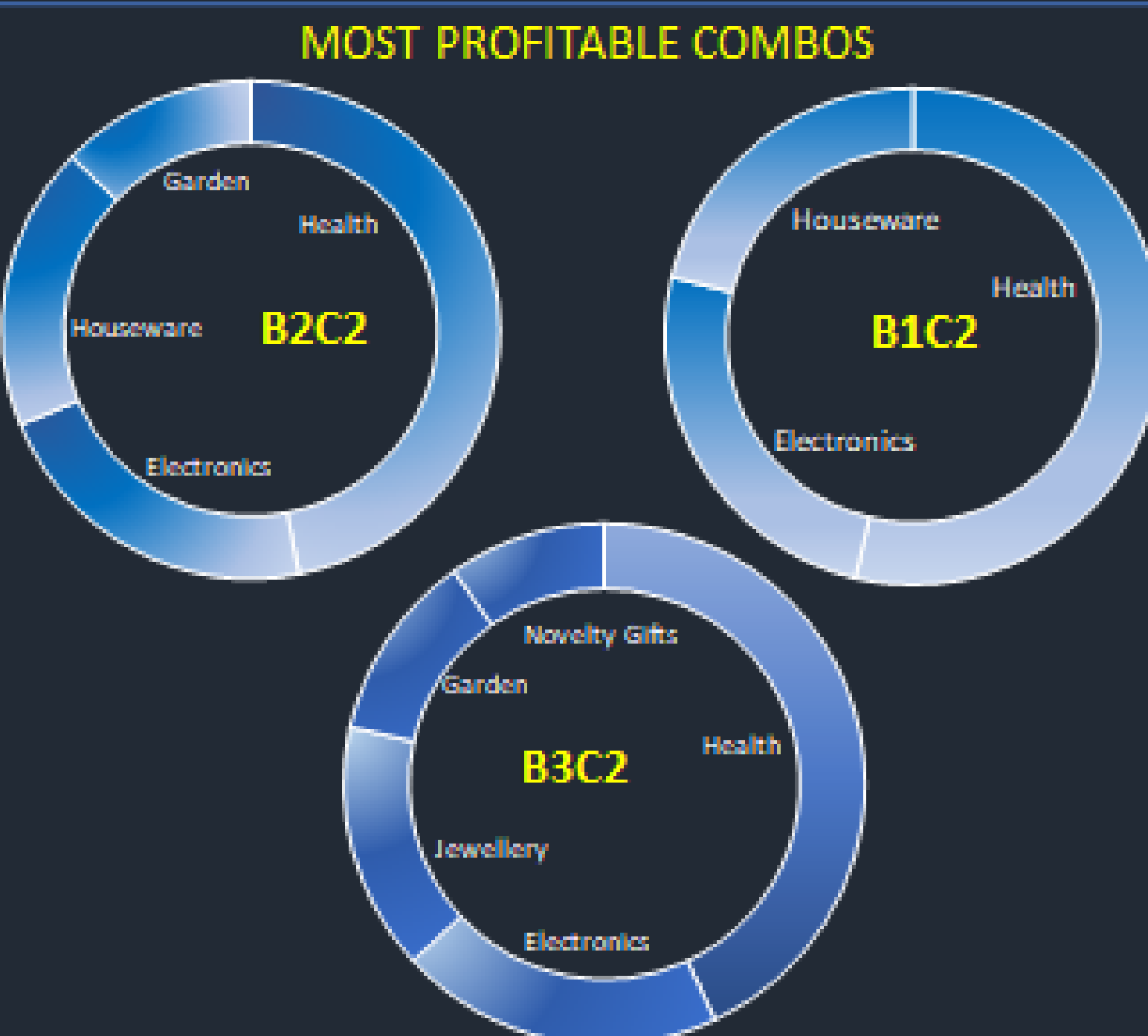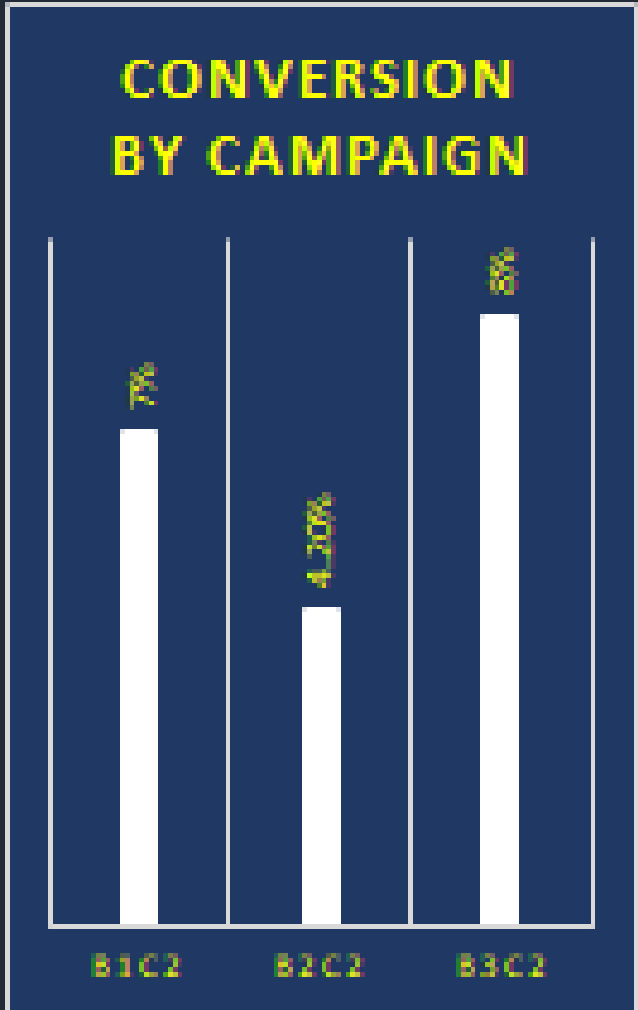
TOP 5 CROSS- SELLERS

Health Products

Electronics

Garden

Novelty Gifts

Houseware

KPIs

50,000 Transactions ↑ 20%	$100,000 Sales Revenue ↑ 15%	20% Return On Investment ↑ 7.5%
12.5% Conversion Rate ↑ 5.65%	$10.60 Cost Per Win ↓ 4.75%	$5.25 Cost Per Lead ↓ 10.75%

MOST PROFITABLE COMBOS

B2C2 — Garden, Health, Houseware, Electronics

B1C2 — Houseware, Health, Electronics

B3C2 — Novelty Gifts, Garden, Health, Jewellery, Electronics

CONVERSION BY CAMPAIGN

- B1C2: 7%
- B2C2: 4.20%
- B3C2: 8%

MONTHLY SALES- CAMPAIGN B1C2

000's Dollars (0 – 1200) by Month: July, Aug, Sep, Oct, Nov, Dec

MONTHLY SALES - CAMPAIGN B2C2

000's DOLLARS (0 – 1500) by Month: July, Aug, Sep, Oct, Nov, Dec

MONTHLY SALES - CAMPAIGN B3C2

000's Dollars (0 – 1400) by Month: July, Aug, Sep, Oct, Nov, Dec

THANK YOU

Any Questions?