



# SUPERMARKET DATA ANALYSIS

Analysis of customer behavior patterns to increase supermarket revenue based on customer segmentation, product preferences, campaign optimization, and distribution channel adjustments.

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**Created by**  
Tigfhar Ahmadiyadi

**LinkedIn**  
[linkedin.com/in/tigfharahmadjayadi](https://linkedin.com/in/tigfharahmadjayadi)

**Portfolio**  
[tigfhar52.github.io/Web\\_Portofolio\\_Tigfhar-Ahmadiyadi](https://tigfhar52.github.io/Web_Portofolio_Tigfhar-Ahmadiyadi)

**April 2024**

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# 1 INTRODUCTION

Background Context, Stakeholder, Problem Statement,  
Goals, Data Overview

# BACKGROUND

## WHAT HAPPENED?

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- After **operating for several years**, the supermarket realized there was **no significant increase in annual revenue**.
- The supermarket **saw an opportunity** to boost its revenue in the **digitalization era**.
- The supermarket decided to **utilize customer data from the past two years**, turning it from merely a database into **actionable insights** to increase their revenue in the coming years.



Photo by Edward from Pexels:

<https://www.pexels.com/photo/man-sitting-on-shopping-cart-3427609/>

# BUSINESS QUESTION

WE WILL SOLVE THESE PROBLEMS

## MAIN BUSINESS QUESTION

How can the supermarket **increase its revenue** based on customer behavior patterns over the past two years?

## DATA-DRIVEN RESEARCH QUESTIONS

1. What are the **characteristics of the supermarket's potential customers?**
  - a. How can the supermarket segment its customers to identify potential targets for increasing sales?
  - b. What is the profile of the potential customer segment to target for boosting sales?
2. How can the supermarket **optimize sales within the potential customer segment?**
  - a. What products are suitable to offer to the potential customer segment?
  - b. What are the right campaign strategies for the potential customer segment?
  - c. Which distribution channels are most appropriate for serving the potential customer segment?





# GOALS

THIS IS WHAT WE AIMED FOR

This analysis is specifically tailored for the supermarket's Business Development team with primary goal of this analysis is to **boost the supermarket's revenue by understanding customer behavior patterns** over the past two years and identifying the characteristics of potential customers to target for increased sales.

# DATA OVERVIEW

## DATASET USED IN THE ANALYSIS

The dataset covers four key areas:

- **People** (demographics, household data, tenure, recency, complaints)
- **Products** (spending on wine, fruits, meat, fish, sweets, and gold)
- **Promotion** (engagement with discounts and campaigns),
- **Place** (purchasing via web, catalog, in-store, and recent website visits).

It enables analysis of customer behavior, spending patterns, campaign effectiveness, and purchasing channels.

Column	Description
ID	Unique customer ID number
Year_Birth	Customer's year of birth
Education	Customer's education level
Marital_Status	Customer's marital status
Income	Customer's annual household income
Kidhome	Number of children in the customer's household
Teenhome	Number of teenagers in the customer's household
Dt_Customer	Customer's registration date with the company
Recency	Number of days since the customer's last purchase
Complain	Status of customer complaints in the last 2 years (Y/N)
MntWines	Amount spent on wine by the customer in the last 2 years
MntFruits	Amount spent on fruits by the customer in the last 2 years
MntMeatProducts	Amount spent on meat by the customer in the last 2 years
MntFishProducts	Amount spent on fish by the customer in the last 2 years
MntSweetProducts	Amount spent on sweets by the customer in the last 2 years
MntGoldProds	Amount spent on gold products by the customer in the last 2 years
NumDealsPurchases	Number of purchases made with discounts
AcceptedCmp1	1 if the customer accepted the offer in the first campaign, 0 otherwise
AcceptedCmp2	1 if the customer accepted the offer in the second campaign, 0 otherwise
AcceptedCmp3	1 if the customer accepted the offer in the third campaign, 0 otherwise
AcceptedCmp4	1 if the customer accepted the offer in the fourth campaign, 0 otherwise
AcceptedCmp5	1 if the customer accepted the offer in the fifth campaign, 0 otherwise
Response	1 if the customer accepted the offer in the latest campaign, 0 otherwise
NumWebPurchases	Number of purchases made through the company's website
NumCatalogPurchases	Number of purchases made using catalogs
NumStorePurchases	Number of purchases made directly in stores
NumWebVisitsMonth	Number of visits to the company's website in the last month

# 2

# DISCUSSION

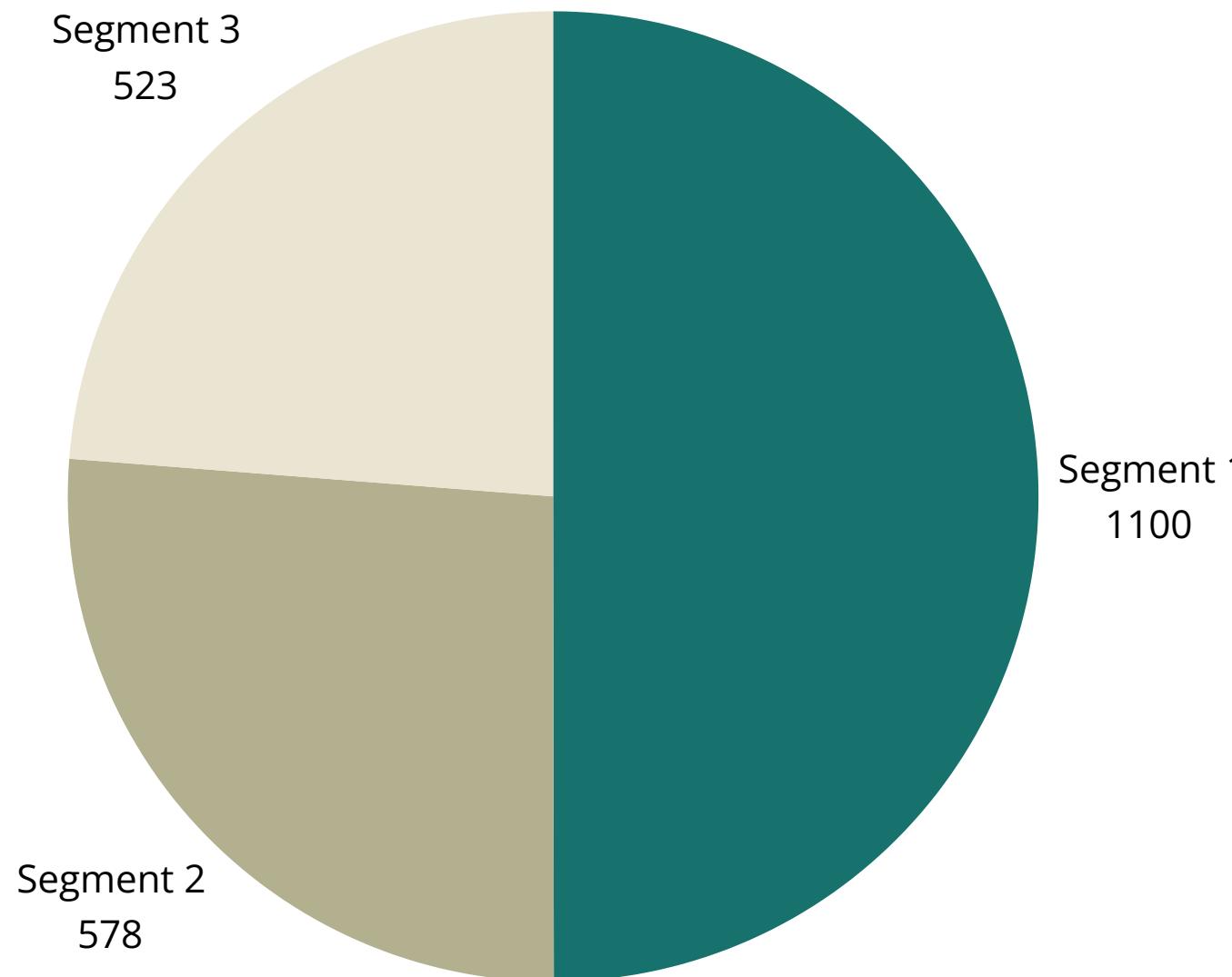
Segmentation, Demographic Profile, Product Preference,  
Campaign Strategy, Distribution Channel Choice.

# CUSTOMER SEGMENTATION

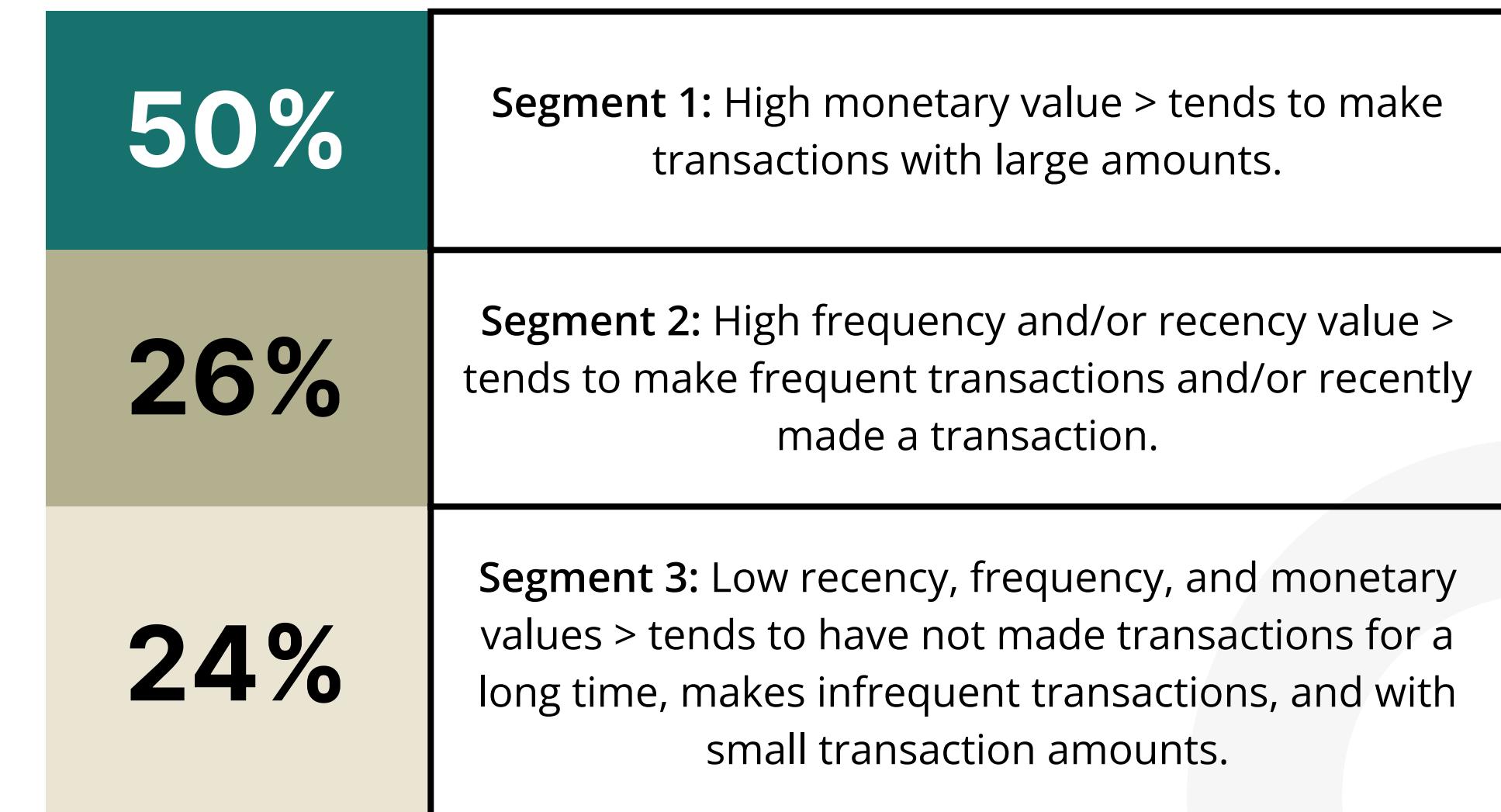
How can the supermarket segment its customers to identify potential targets for increasing sales?

# PEOPLE

## Customer Distribution by RFM



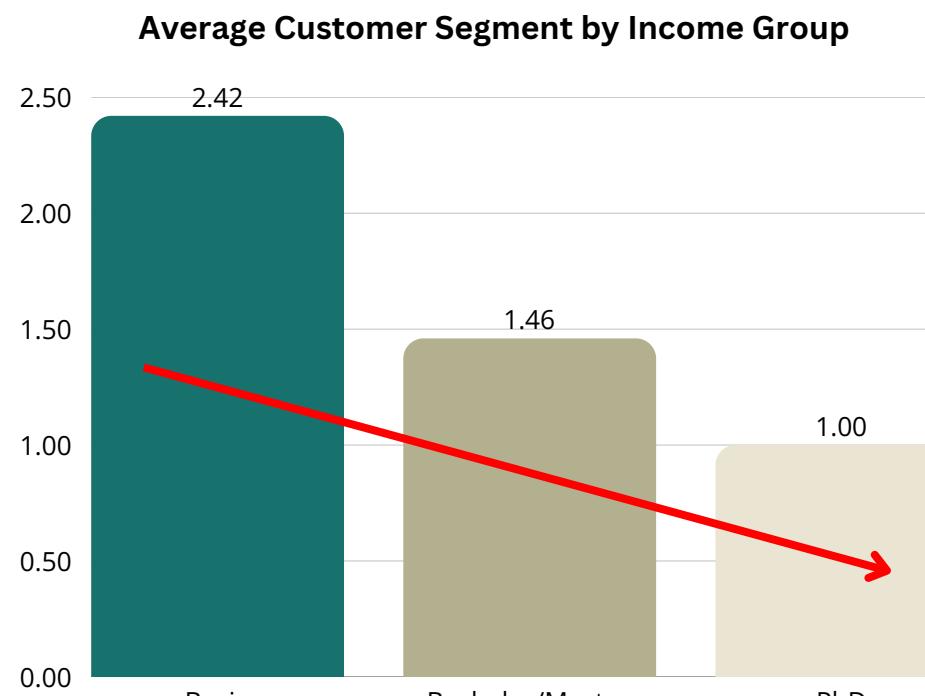
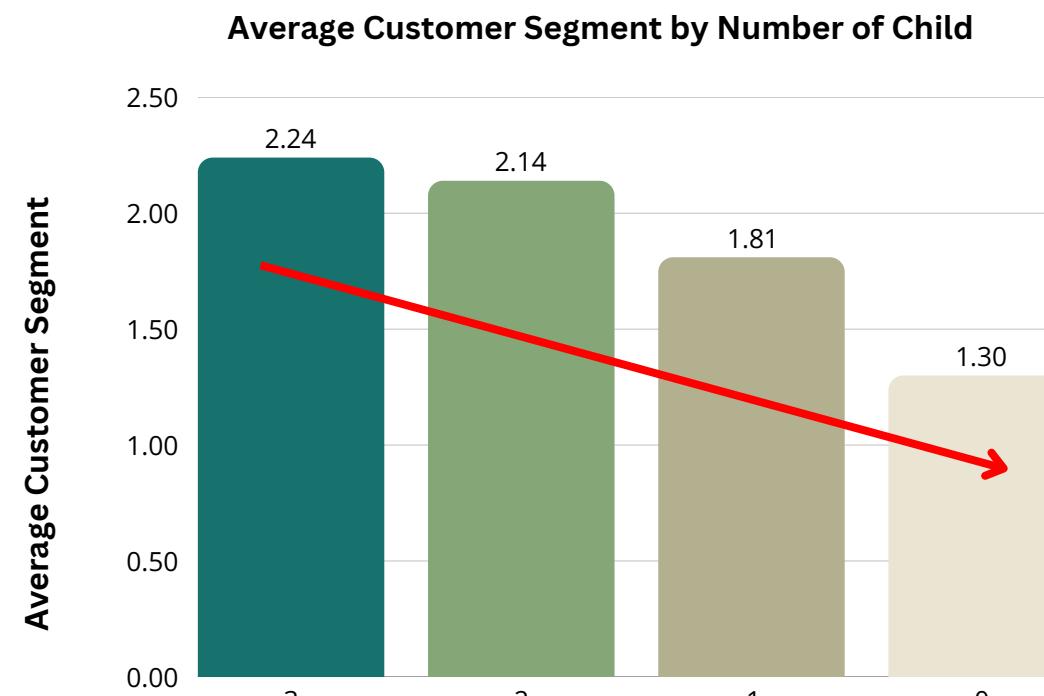
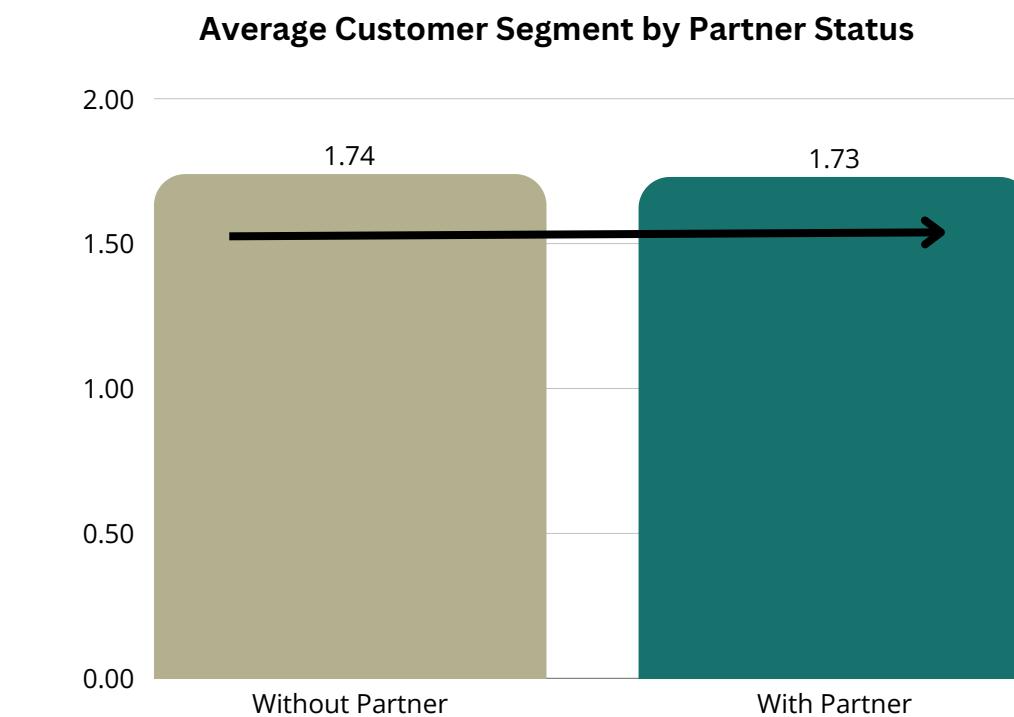
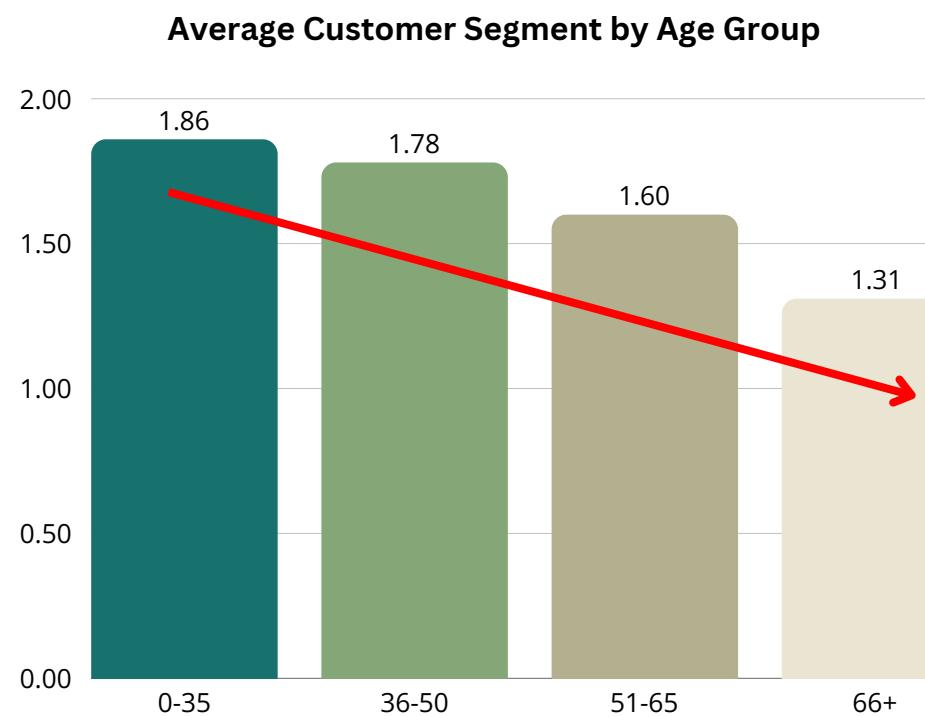
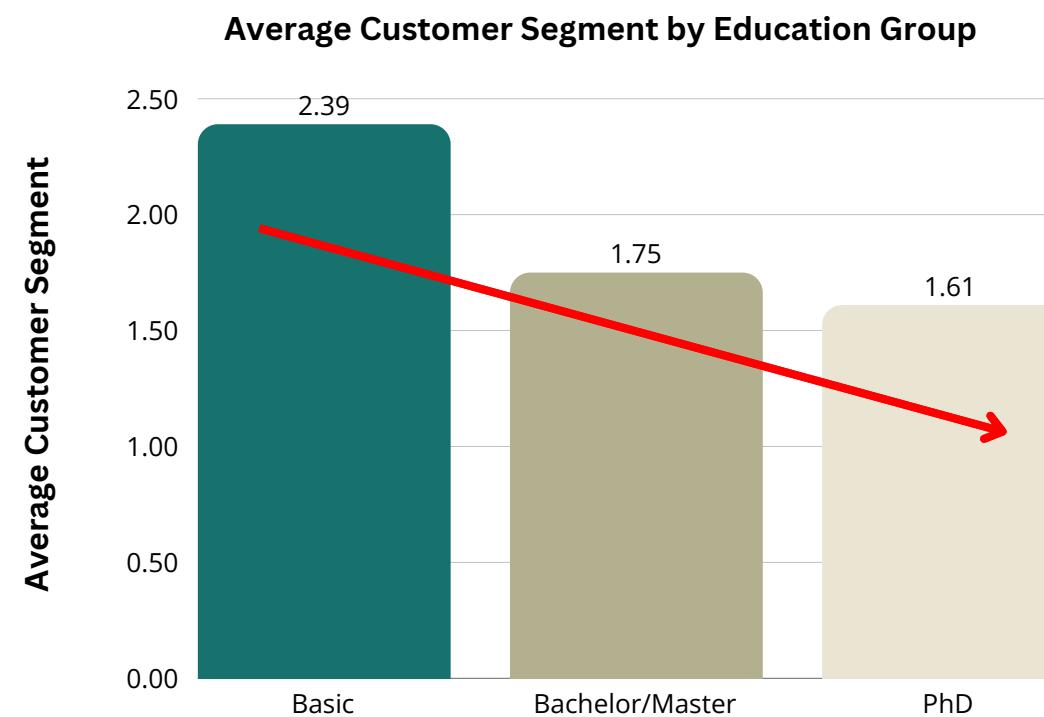
The **RFM method** is used to segment customers based on **Recency, Frequency, and Monetary** values.



# PEOPLE

# DEMOGRAPHIC PROFILE

What is the profile of the potential customer segment to target for boosting sales?



**Bivariate analysis** was used, providing insights into the relationship between customer segments and demographic profiles, including:

- **Age:** Older > Potential.
- **Education Level:** Higher education level > Potential.
- **Marital Status:** No significant relationship.
- **Number of Children:** Fewer children > Potential.
- **Income Level:** Higher income > Potential.



Image Source: <https://forbes.com/sites/avivahwittenbergcox/2022/07/16/older-age-is-happier-than-you-think--its-middle-age-thats-miserable/>

# CUSTOMER PROFILE BY AGE

WHAT IS THE PROFILE OF THE POTENTIAL CUSTOMER SEGMENT TO TARGET FOR BOOSTING SALES?

## FINDINGS

Overall, supermarket customers are aged 36-50 years. Potential customers are older, as indicated by a higher proportion of customers aged 51-65 years compared to segments 2 and 3.

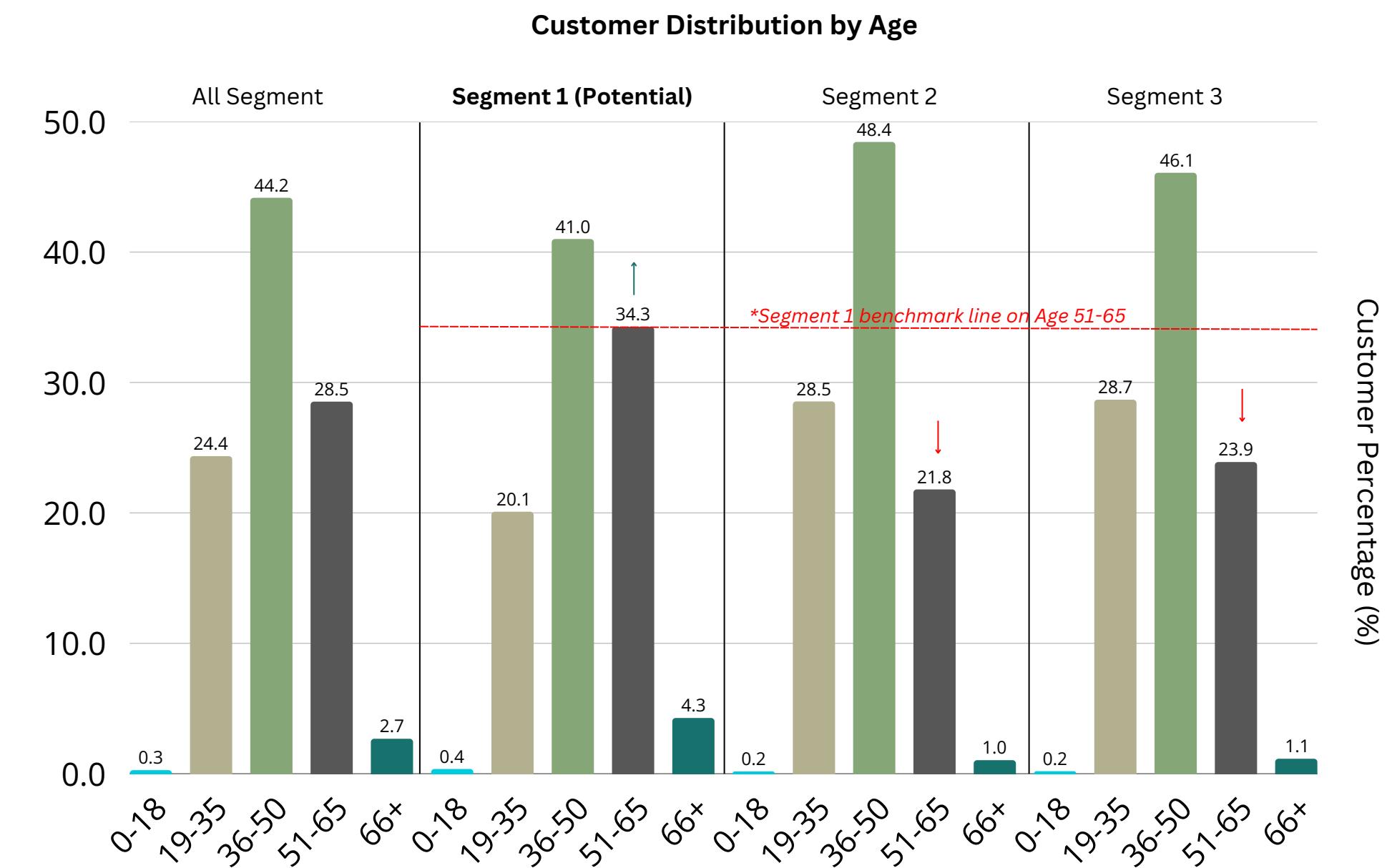




Image Source: <https://www.ppic.org/higher-education/>

# CUSTOMER PROFILE BY EDUCATION

WHAT IS THE PROFILE OF THE POTENTIAL CUSTOMER SEGMENT TO TARGET FOR BOOSTING SALES?

## FINDINGS

Overall, supermarket customers have a bachelor's degree. Potential customers have a higher education level, with a higher proportion of PhD holders compared to segments 2 and 3, even surpassing master's degree holders by about 1%. There are almost no customers with a basic education level.

Customer Distribution by Education

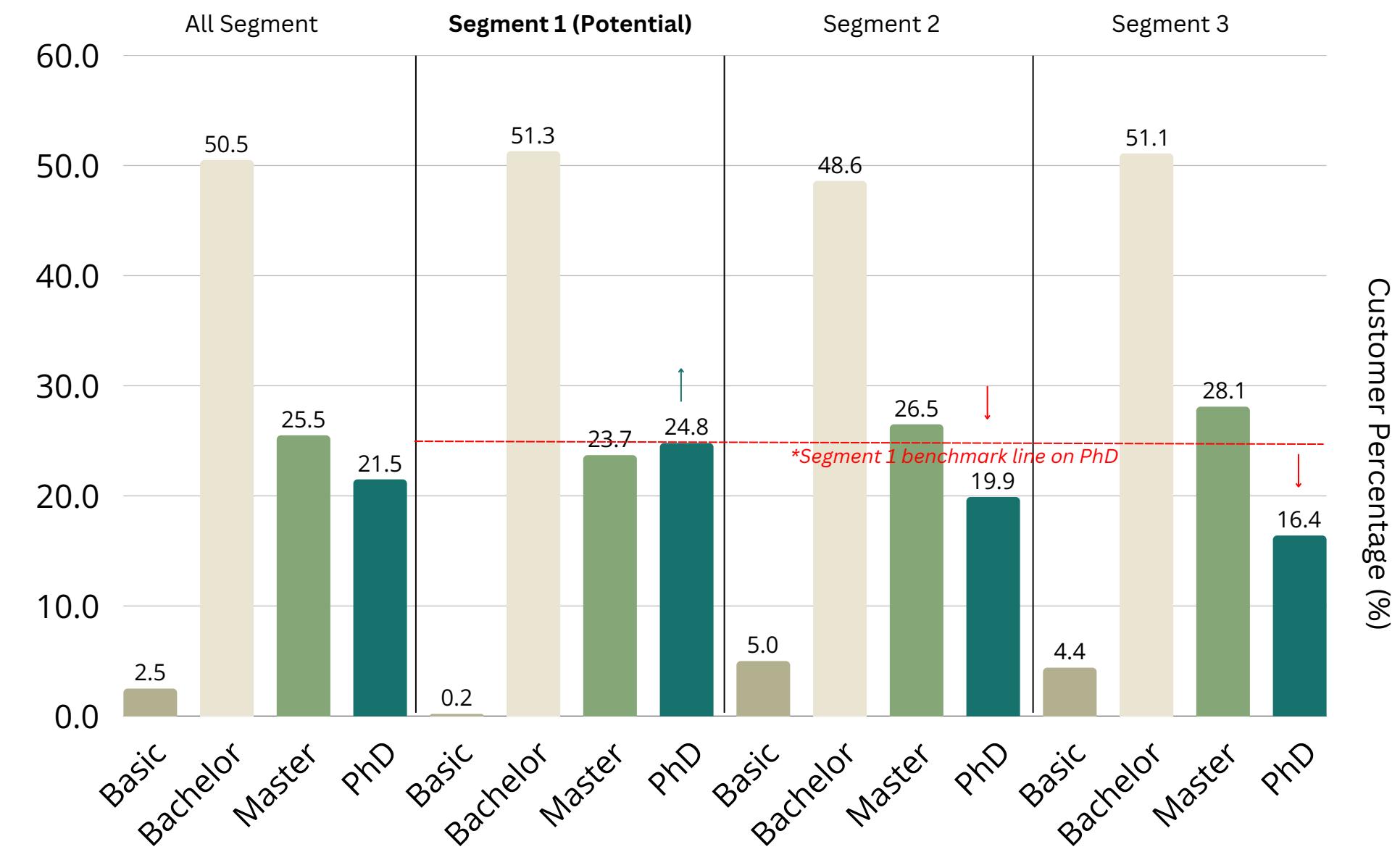




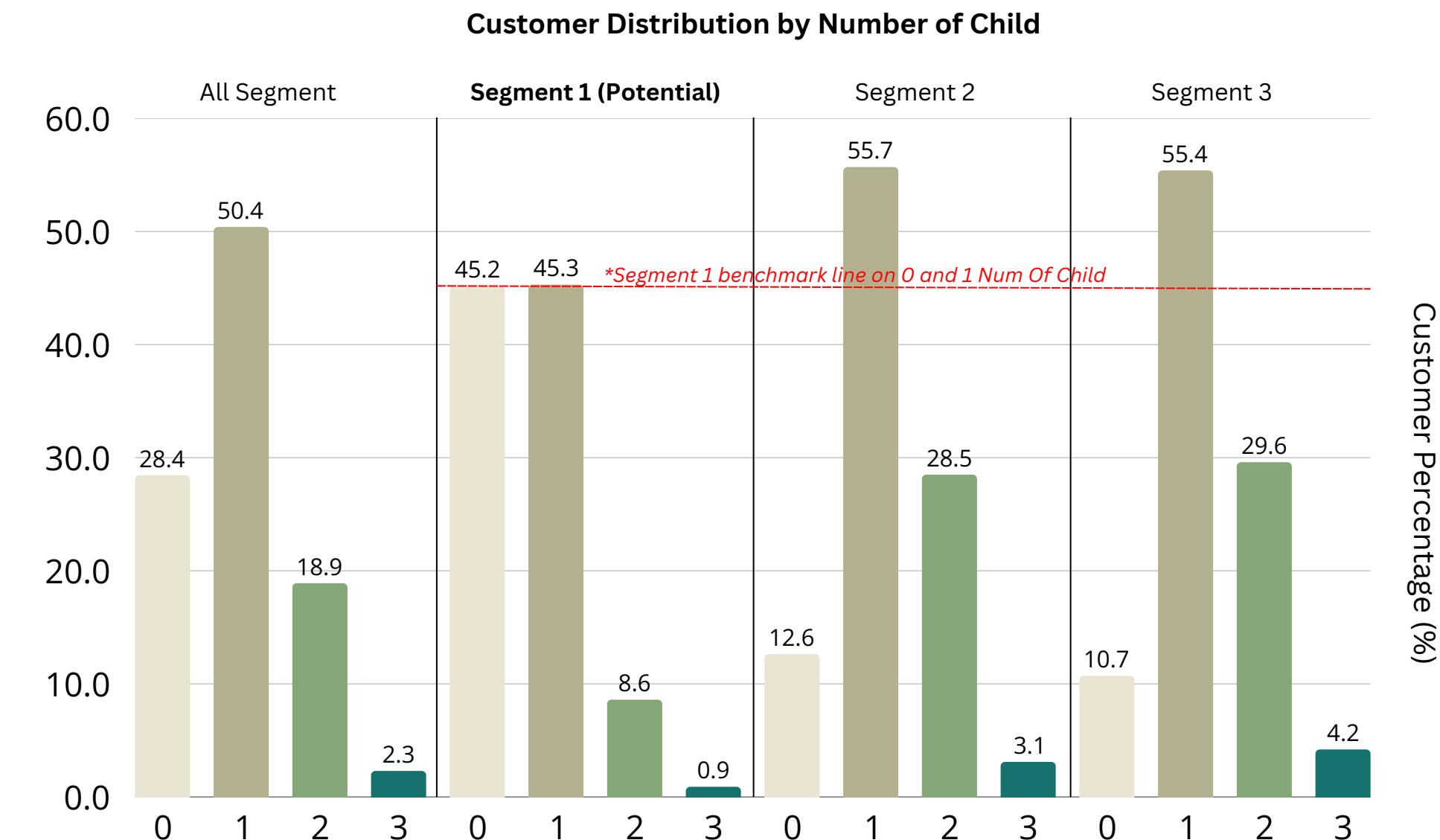
Image Source: <https://www.littlelives.org.uk/blog/5-back-to-school-tips-and-tricks/>

# CUSTOMER PROFILE BY NUMBER OF CHILD

WHAT IS THE PROFILE OF THE POTENTIAL CUSTOMER SEGMENT TO TARGET FOR BOOSTING SALES?

## FINDINGS

Overall, supermarket customers typically have one child. Among potential customers, nearly 50% do not have children, which contrasts with segments 2 and 3, where 50% have one child.



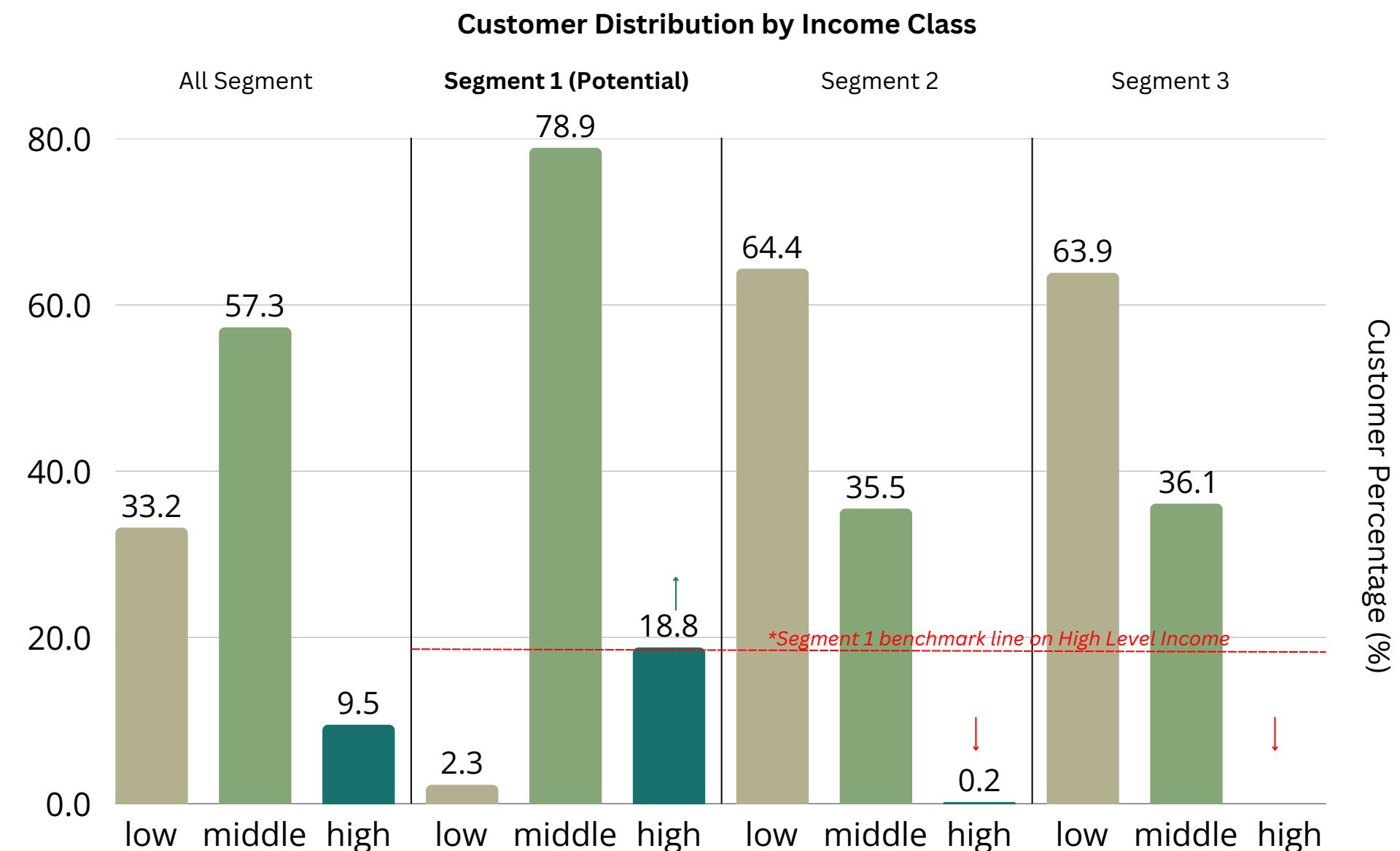


# CUSTOMER PROFILE BY INCOME CLASS

WHAT IS THE PROFILE OF THE POTENTIAL CUSTOMER SEGMENT TO TARGET FOR BOOSTING SALES?

## FINDINGS

Overall, supermarket customers earn between \$40,000 and \$80,000 per year. Potential customers have higher incomes, with only a small portion (2.27%) earning \$0-\$4,000 annually, and a significant proportion earning over \$80,000 per year compared to segments 2 and 3.



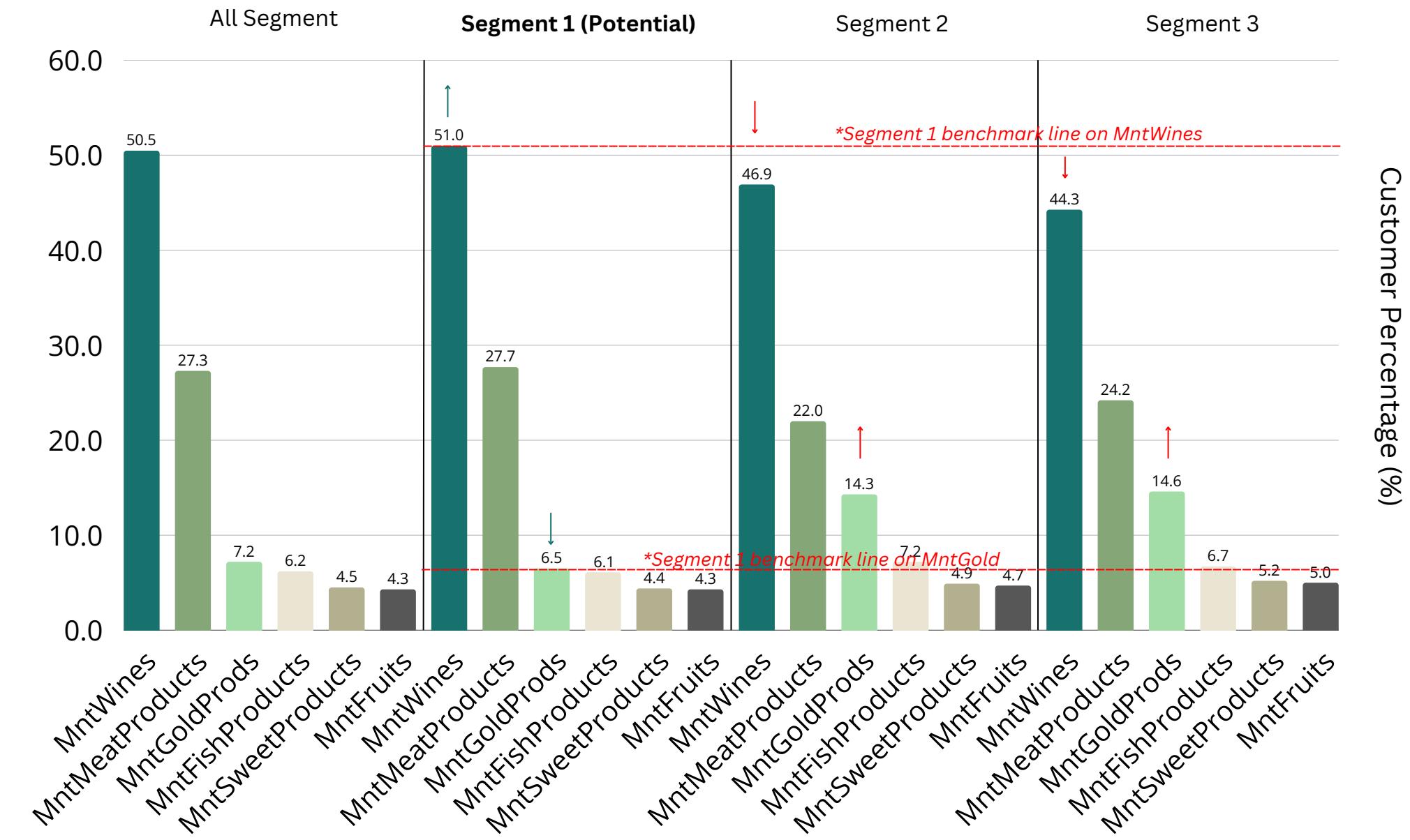
# PRODUCT

WHAT PRODUCTS ARE SUITABLE TO OFFER TO THE POTENTIAL CUSTOMER SEGMENT?

Image Source: [https://www.freepik.com/premium-ai-image/full-shopping-cart-with-groceries-inside-supermarket\\_158242845.htm](https://www.freepik.com/premium-ai-image/full-shopping-cart-with-groceries-inside-supermarket_158242845.htm)



Customer Distribution by Amount Spent on Product



## FINDINGS

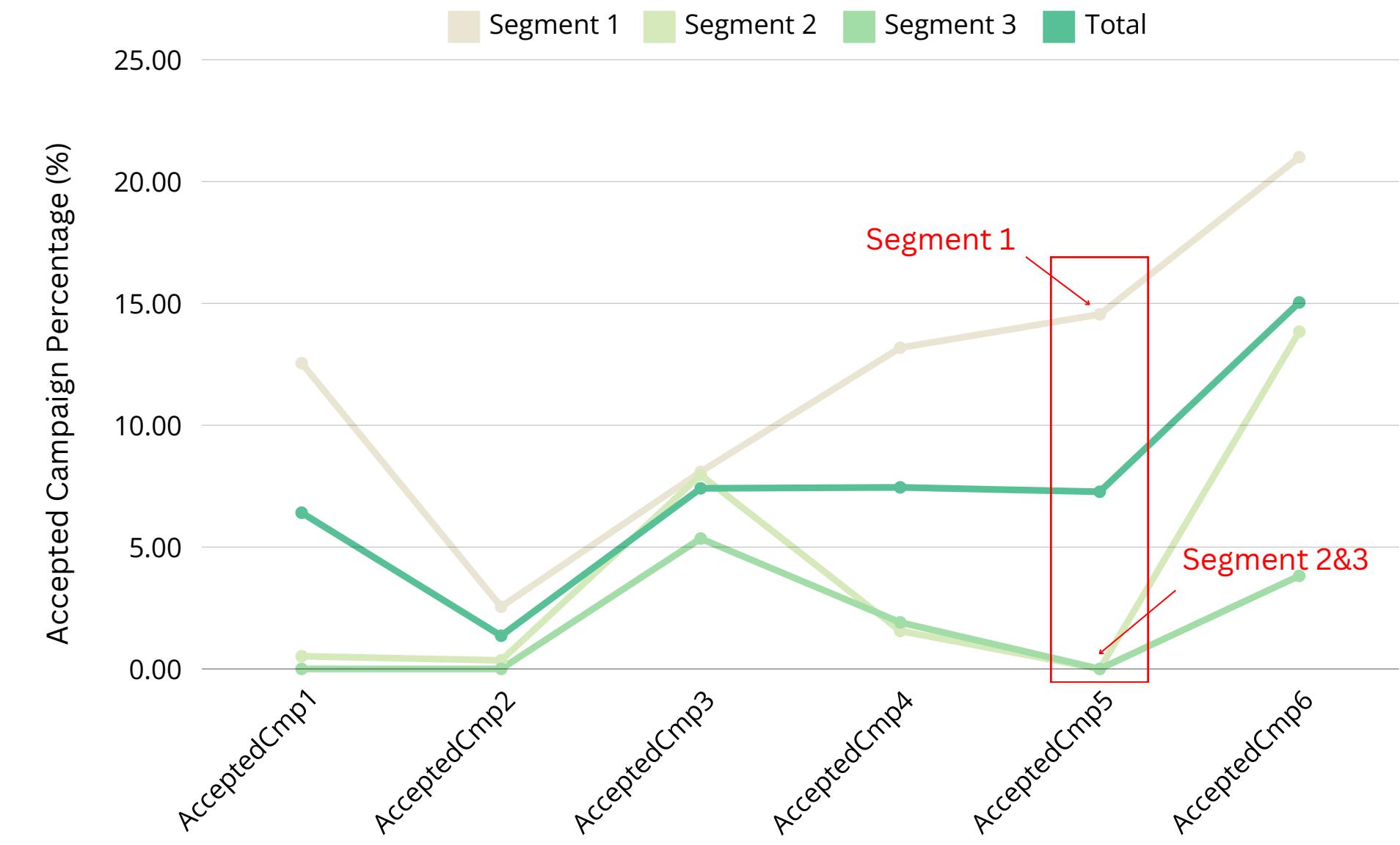
- Overall, customers tend to allocate a significant amount of their spending on wine products.
- Potential customers show a higher interest in wine and meat products and a lower interest in gold compared to customers in segments 2 and 3.

# PROMOTION

WHAT ARE THE RIGHT CAMPAIGN STRATEGIES  
FOR THE POTENTIAL CUSTOMER SEGMENT?



Customer Distribution by Campaign Acceptance



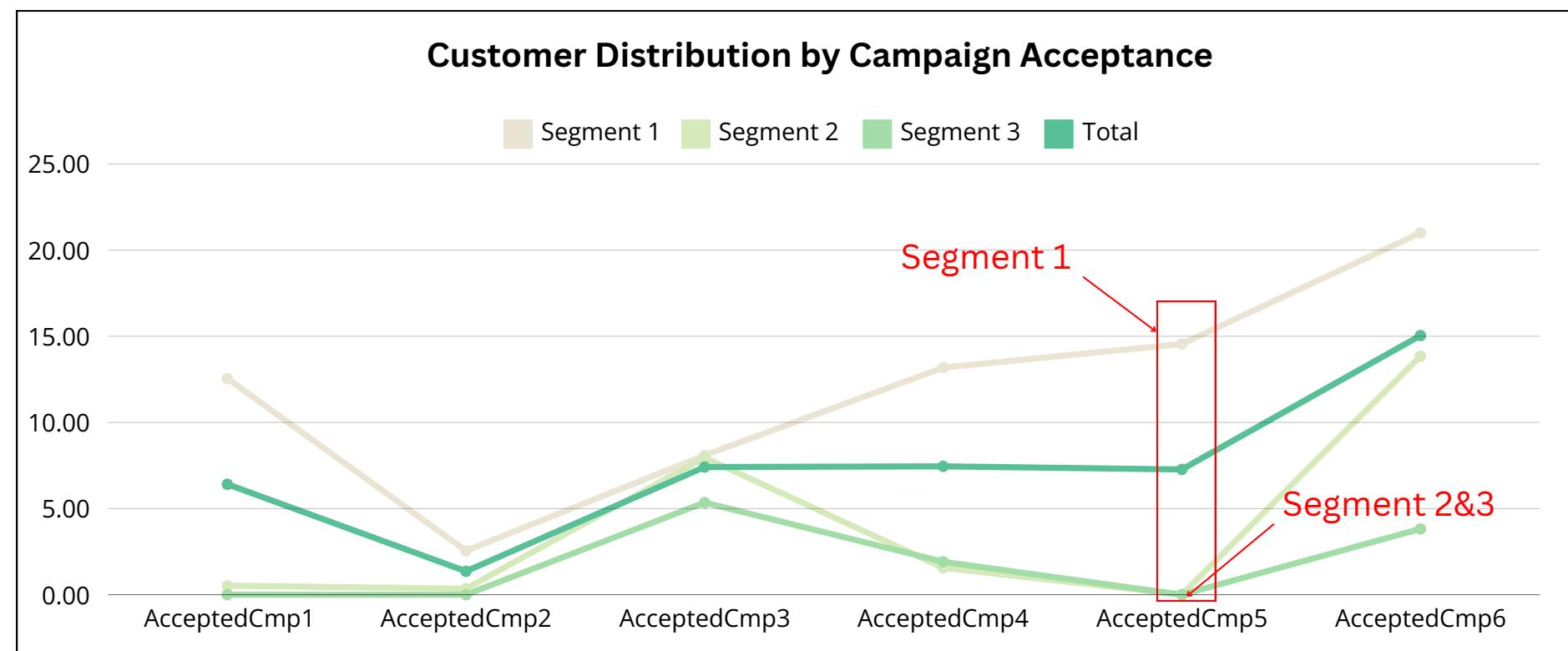
## FINDINGS

- The most preferred channel among customers in all segments is the store.
- Potential customers show a higher interest in the catalog channel compared to segments 2 and 3.

# PROMOTION

WHAT ARE THE RIGHT CAMPAIGN STRATEGIES FOR THE POTENTIAL CUSTOMER SEGMENT?

Correlation of Campaign and Products on Segment 1								Correlation of Campaign and Products on Segment 2								Correlation of Campaign and Products on Segment 3								
Amount Spent on Products								Amount Spent on Products								Amount Spent on Products								
Campaign	Wine	Meat	Gold	Fish	Sweet	Fruits	Monetary..	Campaigns	Wines	Meat	Gold	Fish	Sweet	Fruits	Monetary..	Campaigns	Wine	Meat	Gold	Fish	Sweet	Fruits	Monetary	
Campaign 1	24.2%	20.9%	2.9%	13.7%	13.7%	5.3%	29.9%	Campaign 1	11.2%	9.0%	1.7%	0.1%	0.1%	4.7%	10.5%	Campaign 1								
Campaign 2	15.2%	-3.7%	0.7%	-7.0%	-6.5%	-8.6%	10.5%	Campaign 2	2.2%	-9.5%	-3.2%	-7.6%	-7.8%	-7.6%	-3.7%	Campaign 2								
Campaign 3	9.1%	0.6%	13.8%	-3.1%	-1.5%	0.4%	7.0%	Campaign 3	-6.6%	-7.4%	19.6%	-6.0%	-4.6%	-2.5%	-2.6%	Campaign 3								
Campaign 4	29.7%	-9.6%	-12.9%	-16.8%	-15.6%	-16.1%	11.6%	Campaign 4	19.4%	6.7%	1.0%	-6.1%	-4.1%	-4.0%	16.0%	Campaign 4								
Campaign 5	37.0%	27.1%	2.2%	7.6%	14.6%	9.3%	41.5%	Campaign 5	Zero Acceptance								Campaign 5							
Campaign 6	19.1%	19.3%	3.9%	2.2%	4.5%	5.2%	25.3%	Campaign 6	2.3%	18.0%	22.5%	5.0%	11.3%	9.3%	13.3%	Campaign 6								
All Campaign	40.7%	18.0%	1.1%	-1.1%	1.8%	-1.5%	37.9%	All Campaign	5.7%	12.7%	24.7%	0.0%	6.0%	3.5%	14.1%	All Campaign								



## FINDINGS

- Overall, campaign 5 had a significant impact on the amount spent on wine and meat, contributing the most to monetary value compared to other campaigns.
- Potential customers tend to embrace campaign 5, which focuses on wine and meat products, unlike other segments that reject campaign 5 and are more focused on gold products.

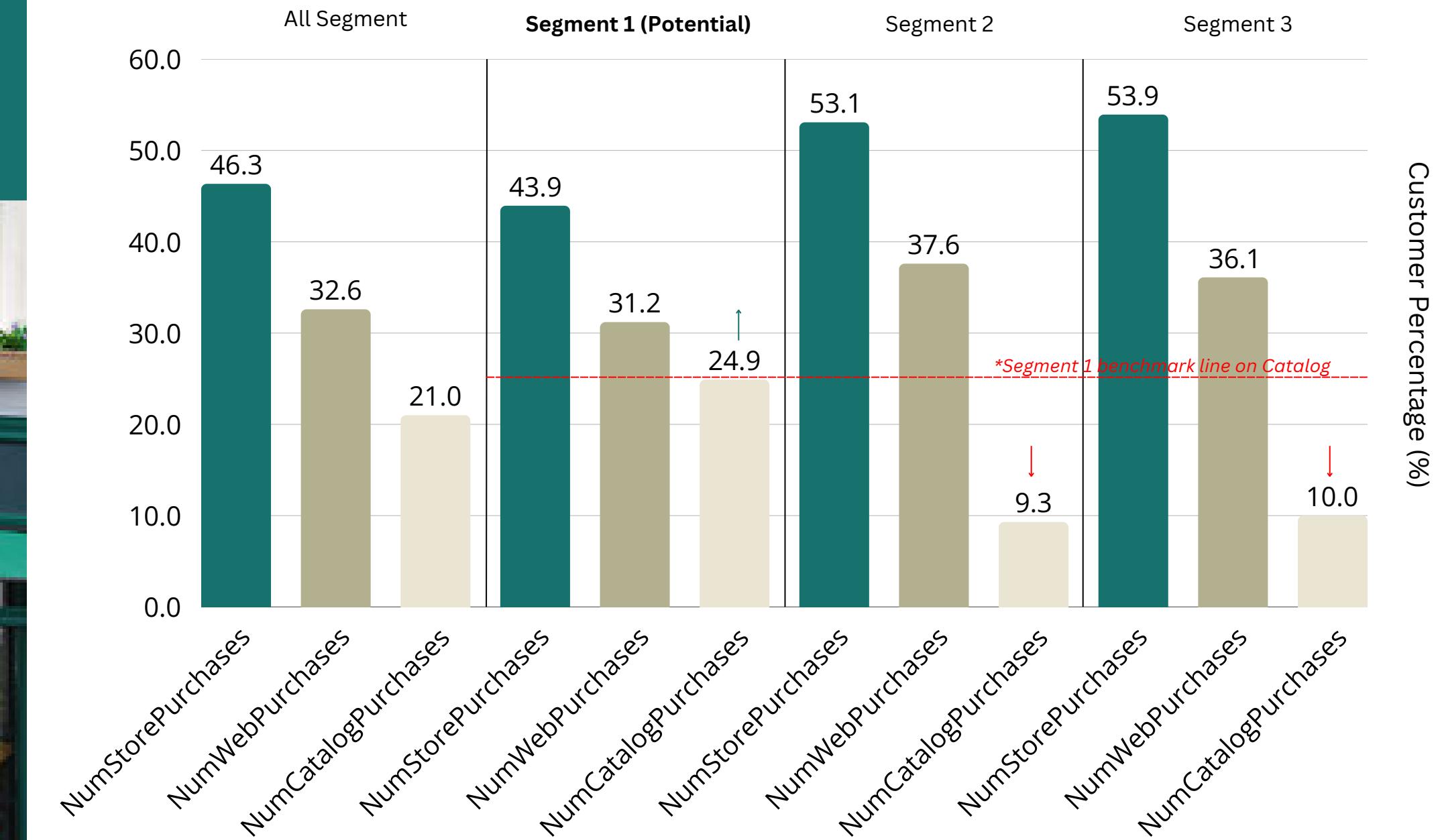
# PLACE

WHICH DISTRIBUTION CHANNELS ARE MOST APPROPRIATE FOR SERVING THE POTENTIAL CUSTOMER SEGMENT?

Image Source: <https://stock.adobe.com/search?k=grocery+store+building>



Customer Distribution by Purchase Channel



## FINDINGS

- The store is the most preferred channel among customers in all segments.
- Potential customers show a higher interest in the catalog channel compared to segments 2 and 3.

# 3

# CONCLUSION

Analysis results on customer segmentation, product, campaign, and distribution channel

# CONCLUSION



## Segmentation

Segment 1 customers are potential customers who tend to make transactions with high-value amounts.

## Demographic Profile

Potential customers consist of individuals who are typically older, highly educated, have fewer children, and fall into the middle to upper-middle income class.

## Product Preferences

Potential customers have a high percentage of Amount Spent on wine and meat products but tend to spend less on gold products.

## Campaign Preferences

Potential customers show high acceptance rates for Campaign 6 and low acceptance rates for Campaign 2. Meanwhile, Campaign 5 contributes the highest revenue through wine and meat products.

## Distribution Channel Preferences

Potential customers tend to prefer direct in-store transactions. Additionally, these customers also show a relatively higher tendency to transact through catalogs.

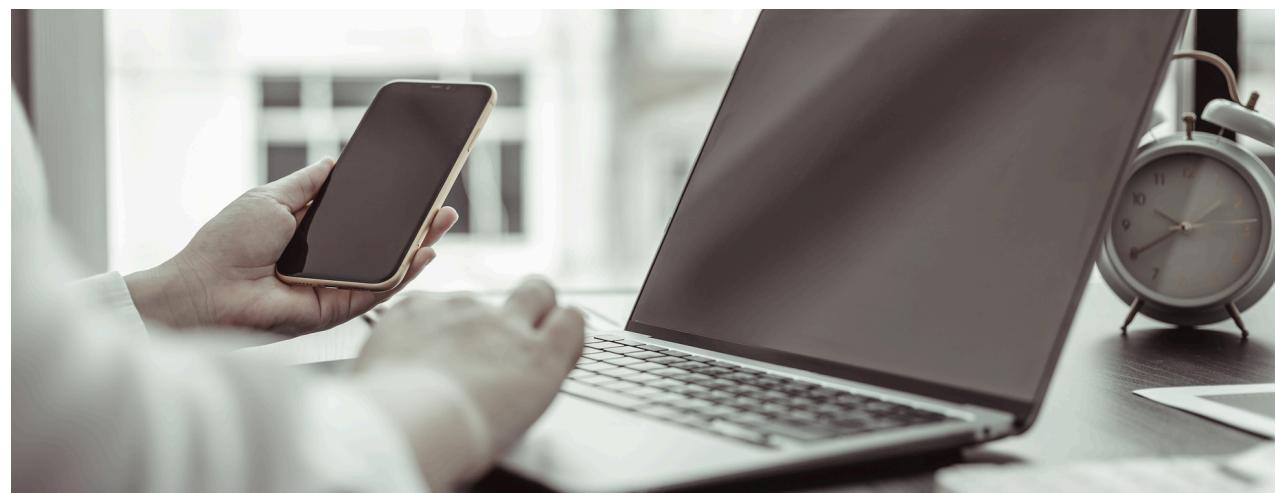
# 4

# RECOMMENDATION

Strategies for Increasing Supermarket Revenue Based on Analysis Results.

# RECOMMENDATION

## SOLUTIONS OF THE PROBLEMS



01

### Customer Segmentation

Prioritize sales to potential customer segments. This allows the supermarket to maximize profits through high revenue with minimal sales frequency compared to other segments.

02

### Products

Increase product variety and offer special promotions on wine and meat to enhance the supermarket's reputation as a store with a wide product range and attractive promotions for potential customer segments.

03

### Campaign

Increase the frequency of campaigns on wine and meat using the strategy from campaign 5 to boost revenue and the strategy from campaign 6 to maximize the conversion rate of potential customers, while avoiding mistakes made in campaign 2.

04

### Distribution Channel

Consider expanding store branches with high standards of cleanliness, security, and skilled staff, and distribute product catalogs featuring wine and meat to every customer visiting the store.

# THANK YOU

● FOR YOUR NICE ATTENTION

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**Created by**  
Tigfhar Ahmadiyadi

**LinkedIn**  
[linkedin.com/in/tigfharahmadjayadi](https://linkedin.com/in/tigfharahmadjayadi)

**Portfolio**  
[tigfhar52.github.io/Web\\_Portofolio\\_Tigfhar-Ahmadiyadi](https://tigfhar52.github.io/Web_Portofolio_Tigfhar-Ahmadiyadi)

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