

# ICT IGNITE DATA ANALYSIS

Group : 9

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Presented To Hanan Swidan

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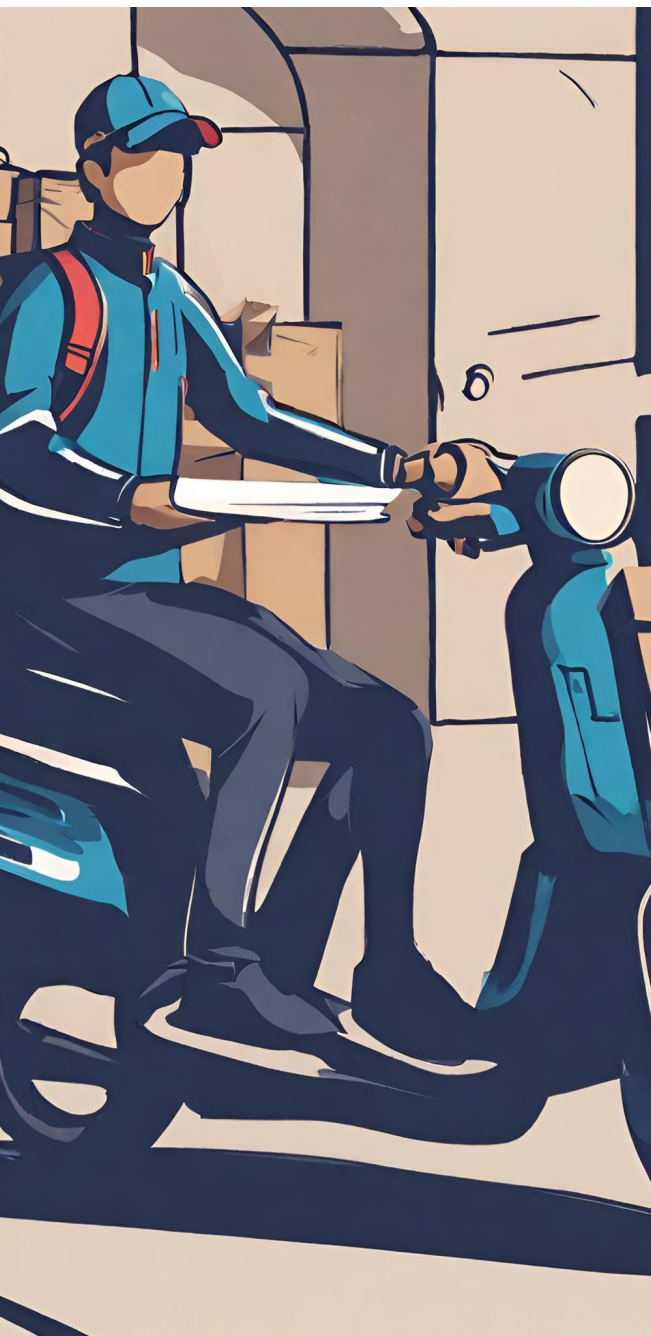
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# Abstract

This project looks at information about online shopping from 2017 to 2027 to help a company called ReturnPal, which deals with online returns. We use Descriptive Analysis to understand the data better. The goal is to find good opportunities for ReturnPal to grow its business and maybe form partnerships with other companies. The insights we get will not only tell us what's happening in the market right now but also help ReturnPal plan for the future and make the most of new trends in the online shopping world.



## Introduction

In the fast-changing world of online shopping, businesses always want to know what's happening and how to make the most of new opportunities. This project is all about online retail, specifically focusing on ReturnPal, a company that helps people with online returns to make it easier for them.

We're using data from 2017 to 2027, gathered from Statistica, to learn more about online shopping trends. The main goal is to use Descriptive Analysis to uncover detailed patterns in this big dataset. By exploring the data systematically, we want to give ReturnPal useful insights so they can make smart choices for growing their business.

Our main focus is on figuring out what ReturnPal should pay attention to. We're not just doing the usual analysis; we're digging deep into how the market works and what customers are doing. By looking closely at the past, we hope to guide ReturnPal to find the right partnerships that match what people want in the market now.

What makes this project special is that we're also looking ahead, using data up to 2027. This forward-thinking view helps ReturnPal get ready for the future. It's like giving them a map to understand where the market is going so they can use their resources wisely and plan strategies to meet what customers will want in the future.

Our mission is clear: to give ReturnPal the knowledge they need to not just handle the challenges of online shopping but also to get ahead and keep growing successfully in the years to come.



# Methodology

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## Data Collection

We started with a comprehensive dataset from Statistica covering the years 2017 to 2027 in e-commerce. Using Excel, we carefully extracted the data to ensure accuracy for the upcoming analysis.

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## Data Cleaning and Formatting

Excel played a crucial role in cleaning and formatting the data. We fixed irregularities like missing values and outliers, making sure the data was consistent and reliable.

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3

## Descriptive Analysis

Python, a powerful programming language, was used for descriptive analysis. We calculated key statistical measures like mean, median, and standard deviation to understand the central tendencies and variations in the dataset.

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## Data Visualization using Tableau

For creating dynamic and interactive visuals of the e-commerce data, we turned to Tableau. Our visualizations cover trends over time, comparisons, and geographical insights, making it easy for stakeholders to understand complex patterns.





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### **Identifying Growth Areas**

Our analysis focused on finding areas where ReturnPal could grow. We looked at trends, shifts in consumer behavior, and market dynamics to uncover opportunities for strategic expansion.

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### **Partnership Opportunities**

By combining Python and Tableau, we identified potential partnership opportunities. We assessed compatibility with major e-commerce players and strategic alliances that align with ReturnPal's growth goals.

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### **Documentation and Reporting**

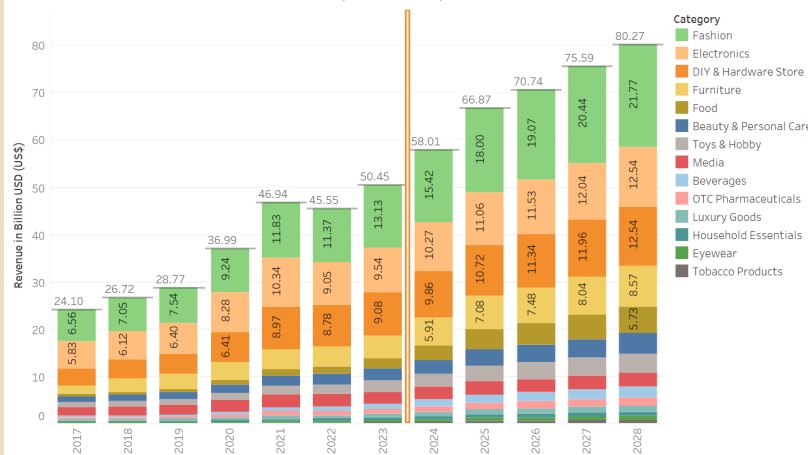
We maintained detailed documentation to ensure transparency and replicability. All our findings and insights were compiled into a comprehensive report, serving as a roadmap for ReturnPal's strategic decision-making.

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# Data Analysis

Decade of Growth: Revenue Evolution (2017-2028) Across Industries



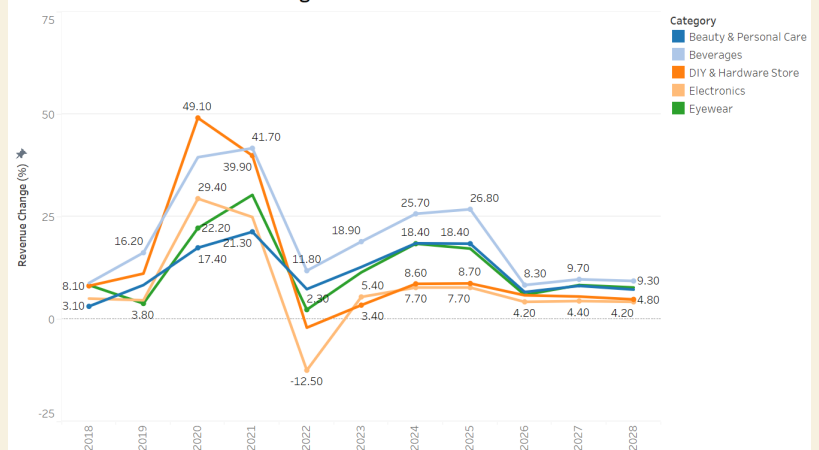
## Decade of growth

The e-commerce industry keeps getting bigger each year, and one standout area is fashion. It's the most profitable category, and we're seeing a steady increase in revenue over time. Consumers seem to really prefer buying clothing online, making it a dominant choice in the e-commerce market.

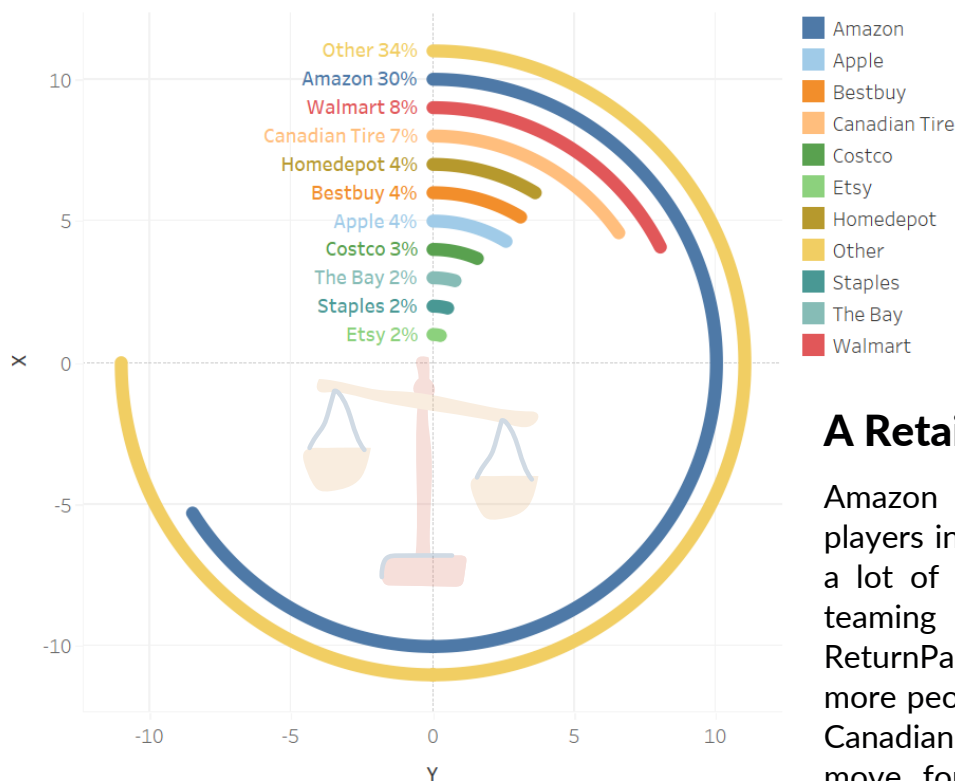
## Diverse Industry by revenue change

Due to COVID-19, online shopping soared. Top 5 categories with the highest revenue change: Beauty and Personal Care, Beverage, DIY and Hardware, Electronics, Eyewear. However, Electronics took a hit in 2022 with a -12.5% revenue change, signaling a downturn.

Diverse Industries: Revenue Change Over a Decade



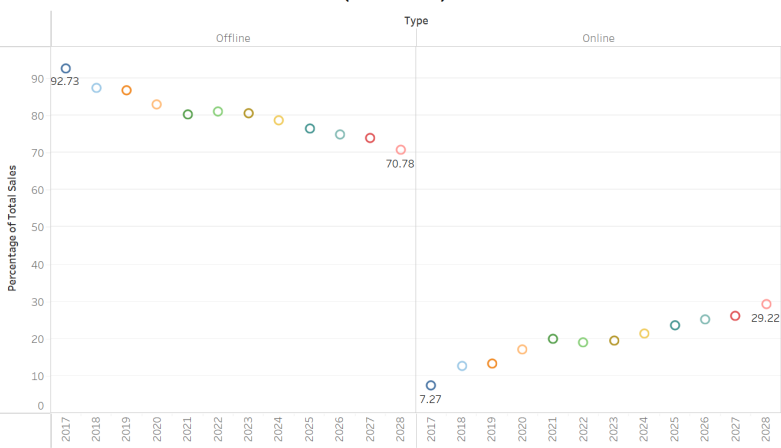
# E-commerce Dominance: A Retailer Comparison in 2022



## A Retailer Comparison

Amazon and Walmart are big players in shopping, and they have a lot of influence. For ReturnPal, teaming up with them can make ReturnPal more popular and reach more people. Also, focusing on the Canadian market can be a smart move for growth. Working with these big companies not only makes ReturnPal more trusted but also helps it become a key player in both local and global online shopping.

Retail Sales Evolution: Offline vs. Online (2017-2028)

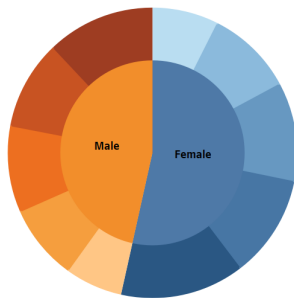


## Online VS Offline

If 80% of people still prefer buying things by physically going to the store, it suggests that many people like shopping in person. In this case, offering offline return options could be a significant opportunity for ReturnPal. If people can return items in-store easily, it might attract more customers and be a boost for ReturnPal's business compared to online returns. Making the return process convenient for people who prefer shopping in physical stores can be a smart move to capture a larger audience.



2023 Demographic Symphony: A Visual Harmony of Age and Gender Distribution



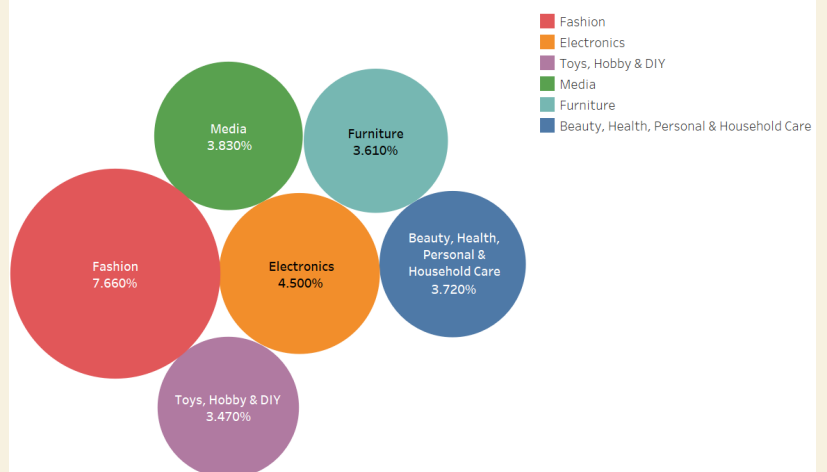
## 2023 Demographic symphony

Our main audience is men and women aged between 25 and 34 years old. Understanding this specific age group helps us tailor our services and offerings to meet the preferences and needs of individuals in this demographic. By focusing on the interests and shopping behaviors of people in the 25-34 age range, we aim to provide a more personalized and engaging experience for our customers.

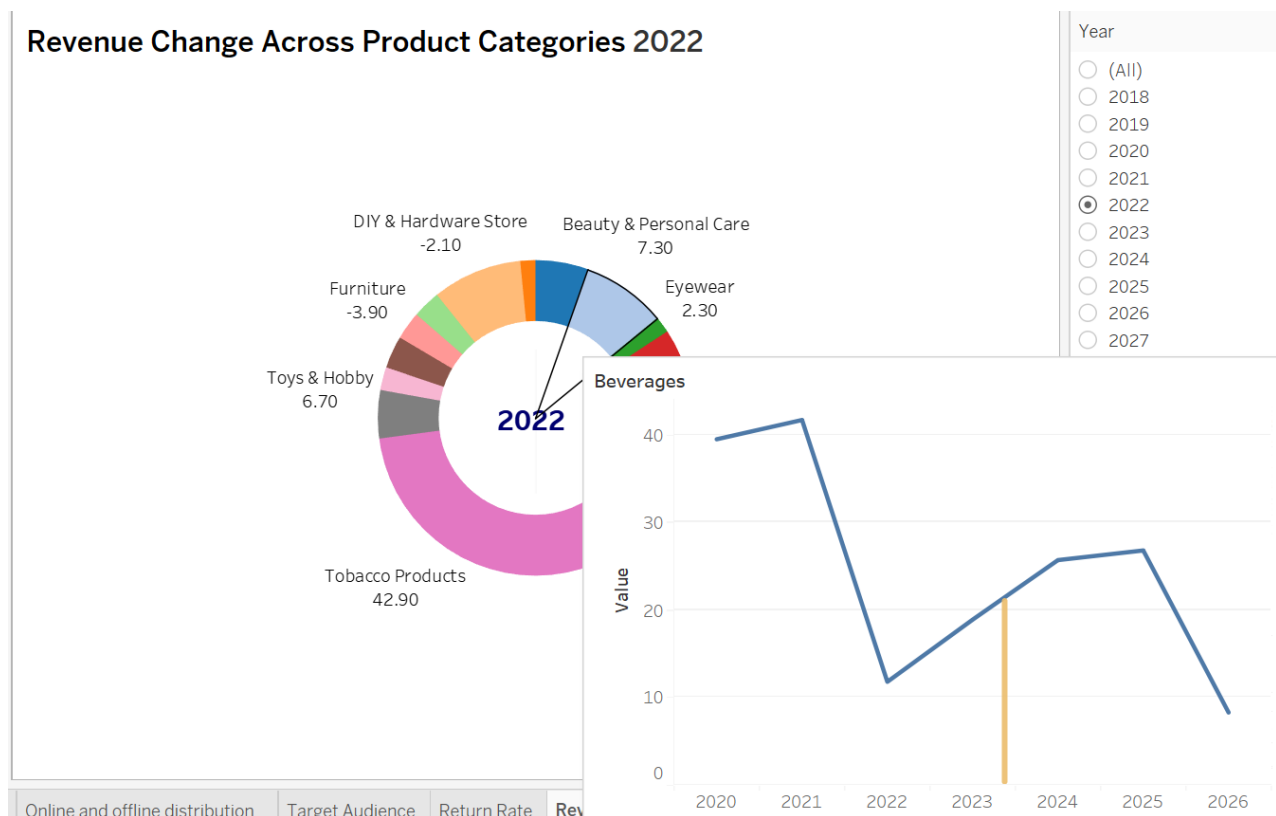
## Return rate as percenatage

The return rate by year chart consistently highlights the fashion industry as the top-performing category each year. This suggests that people frequently return clothes they buy online, making fashion the leading category in returns. Understanding this trend is crucial for businesses, indicating the significance of optimizing online shopping experiences for clothing to minimize returns and enhance customer satisfaction.

Return Rate as a Percentage of Online Order-Intake 2020







## Revenue change across product categories

In this chart depicting revenue change across product categories over the years, we observe significant variations in different sectors. Notably, the tobacco product category stands out with a remarkable increase in revenue change each year. This suggests a substantial growth or shift in consumer spending patterns within the tobacco industry, indicating potential market trends or changes in consumer behavior. Understanding and analyzing such trends can provide valuable insights for businesses operating in these product categories.

# Interpretations and Limitations

## INTERPRETATIONS:

- **TOBACCO INDUSTRY GROWTH:**
  - SIGNIFICANT REVENUE INCREASE IN THE TOBACCO CATEGORY SUGGESTS INDUSTRY GROWTH, POTENTIALLY REFLECTING CHANGING CONSUMER PREFERENCES.
- **CONSUMER BEHAVIOR INSIGHTS:**
  - VARIATIONS IN REVENUE CHANGE ACROSS CATEGORIES PROVIDE VALUABLE INSIGHTS INTO EVOLVING CONSUMER BEHAVIOR, GUIDING STRATEGIC DECISION-MAKING.
- **STRATEGIC DECISION-MAKING:**
  - THE ANALYSIS AIDS BUSINESSES IN MAKING INFORMED DECISIONS, ALLOWING FOR PROACTIVE ADJUSTMENTS TO MARKETING AND PRODUCT STRATEGIES.

## Limitations:

1. **Lack of Context:**
  - Absence of context may limit the depth of interpretation by not accounting for external factors influencing revenue change.
2. **Data Granularity:**
  - Limited granularity may overlook specific nuances within each category, impacting the accuracy of trends.
3. **Time Frame Consideration:**
  - The chosen time frame may not capture the full picture; a broader or more specific duration could alter interpretations.
4. **Single Metric Focus:**
  - Sole reliance on revenue change may oversimplify analysis, ignoring other crucial factors like profit margins or customer satisfaction.
5. **Causation vs. Correlation:**
  - The analysis identifies correlations but doesn't establish causation, requiring further investigation into specific influencing factors.
6. **Industry-Specific Factors:**
  - Each category may be influenced by unique industry-specific factors not accounted for in the analysis.

# Recommendations and Future work

## Recommendations

### 1. Strategic Partnerships:

- Forge strategic partnerships with leading retailers such as Amazon and Walmart to enhance market presence and brand recognition.

### 2. Focus on Fashion:

- Given the consistent high return rate in the fashion category, tailor services and offerings to optimize the online shopping experience for clothing, reducing returns and improving customer satisfaction.

### 3. Adaptability to Trends:

- Stay agile and adaptable to changing consumer trends, particularly in the tobacco industry. Regularly assess and adjust strategies to align with evolving preferences.



## Future Work

### 1. Exploration of Causative Factors:

- Conduct a deeper investigation into the causative factors behind revenue changes, seeking to understand the driving forces influencing consumer behavior and market trends.

### 2. Longitudinal Analysis:

- Extend the analysis over a more extended period or conduct a longitudinal study to capture long-term trends and identify recurring patterns in consumer preferences.

# Appendix

```
# Define the total population
total_population = 100

# Gender distribution percentages
female_percentage = 53.5
male_percentage = 46.5

# Age distribution percentages within each gender
age_distribution_female = {
    '18-24': 13.9,
    '25-34': 25.9,
    '35-44': 21.4,
    '45-54': 20.7,
    '55-64': 18.2,
}

age_distribution_male = {
    '18-24': 13.9,
    '25-34': 25.9,
    '35-44': 21.4,
    '45-54': 20.7,
    '55-64': 18.2,
}

# Calculate the actual numbers
female_population = total_population * (female_percentage / 100)
male_population = total_population * (male_percentage / 100)

female_age_distribution = {age: (percentage / 100) * female_population
    for age, percentage in age_distribution_female.items()}
male_age_distribution = {age: (percentage / 100) * male_population
    for age, percentage in age_distribution_male.items()}

# Display the results
print("Predicted Gender-wise Age Distribution for 2023:")
print("Female:")
for age, population in female_age_distribution.items():
    print(f"{age} years: {population:.2f}")

print("\nMale:")
for age, population in male_age_distribution.items():
    print(f"{age} years: {population:.2f}")
```

# References

<https://www-statista-com.stclair.idm.oclc.org/outlook/emo/ecommerce/worldwide?currency=usd#revenue>