SANDRO

part of SMCP GROUPE

Churn Prediction

Project Submitted: DataMantra
Lead Consultant – **Kabir Singla & Tarun Sachdeva**

Agenda

- *Business Problem*
- *Exploratory Data Analysis*
- *Data Overview*
- *Modeling*
- *ML Algorithm*
- *Results and Conclusion*

BUSINESS
problem

Business *context*

Maintaining ROI while retaining customers

Investment in acquisition campaigns over the last two years has been substantial.

Low purchase frequency

Increasing purchase frequency is a current issue.

High rate of one-time buyers

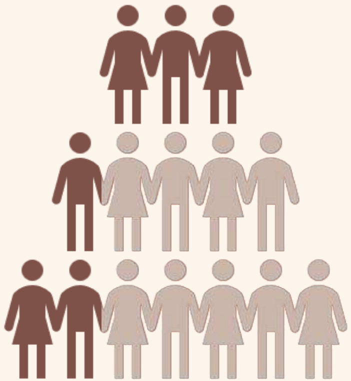
Developing effective retention strategies for these customers is crucial.

ANALYSIS *goal*

Create a churn prediction model for
Sandro customers in France and Great Britain

DEFINING *churn*

The rate at which customers stop doing business with a brand over a specific period.



Improves retention: Targets at-risk customers early.

Optimizes marketing: Focuses on retaining high-value customers.

Enhances experience: Guides service improvements.

Boosts revenue: Cheaper than acquiring new customers.

Informs strategy: Aids in product and pricing decisions.

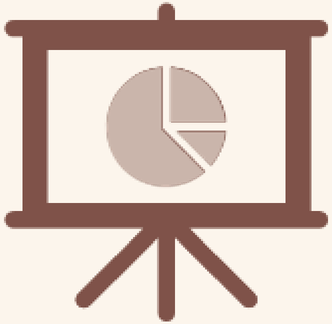
DATA *scope*

Time Period:

Data from February 2020 to February 2024.
Captures seasonal buying patterns and trends.

Customer Demographics:

Nationality: French and British customers.
Geographic Location of Purchases: Global (online and physical stores).



SALES *analysis*

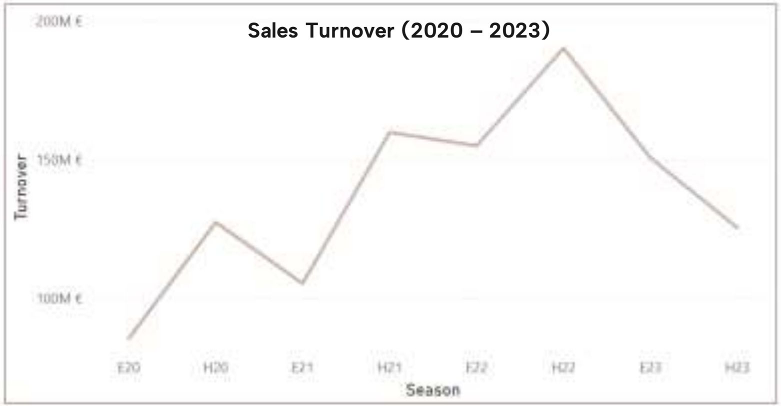
H23 Season Experiences Major Sales Decline Relative to H22

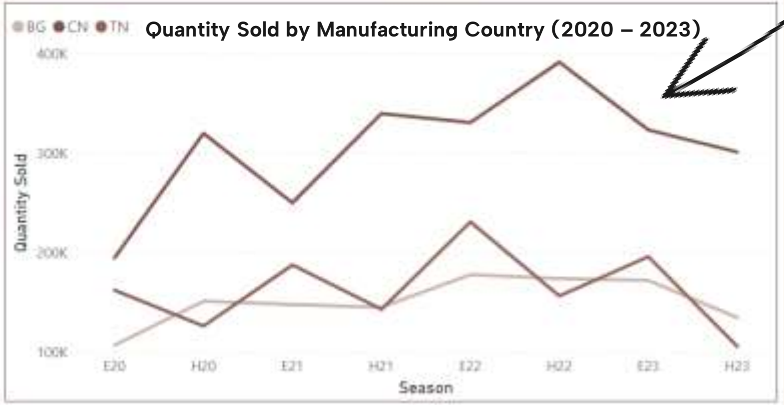
Sales Turnover: Total revenue from sales before deducting costs, adjusted for returns to reflect net sales over a specific period.

Identifying key factors

- Sales increased from E20 to H22 seasons by 121%
- Winter seasons have higher sales than summer seasons
- Steep decline in sales observed from H22 onwards by 35%
- External factors: macroeconomic factors, similar trend among competitors
- Further investigation into drivers of sales decline from internal drivers

China’s Manufacturing Impact on Sales

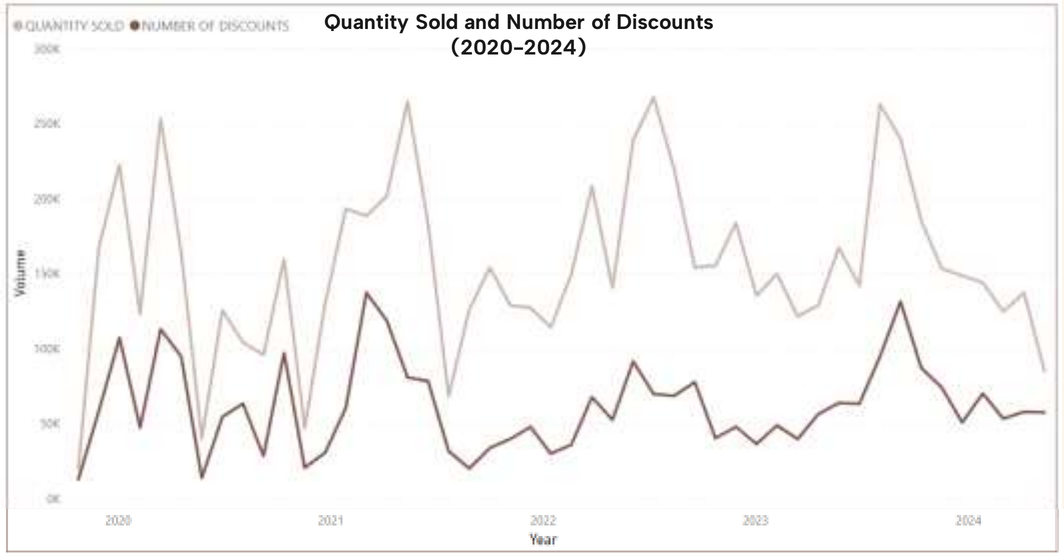




- Decline observed in goods production from China in the last two seasons.
- Recent challenges highlight China's unreliability as a supply source.
- "Made in China" products see reduced popularity and sales impact.

Similar *trend of turnover* with quantity sold by *China manufactured* products.

Parallel Trends in Sales Volume and Discounts

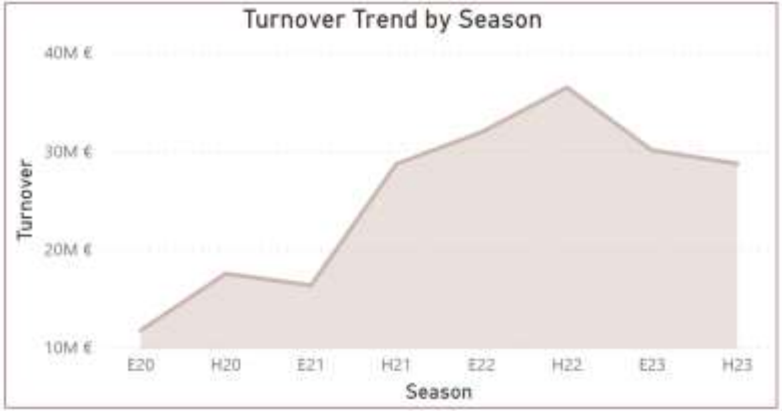


- Clear correlation observed between sales volume and discount frequency.
- Peaks in discounts align with increases in sales volumes.
- Recent trend shows a simultaneous decline in both metrics.
- Decrease in discounts likely driving the sales downturn.

Decrease in number of discounts likely driving *the sales downturn.*

Market Sensitivity to Discounts - Great Britain

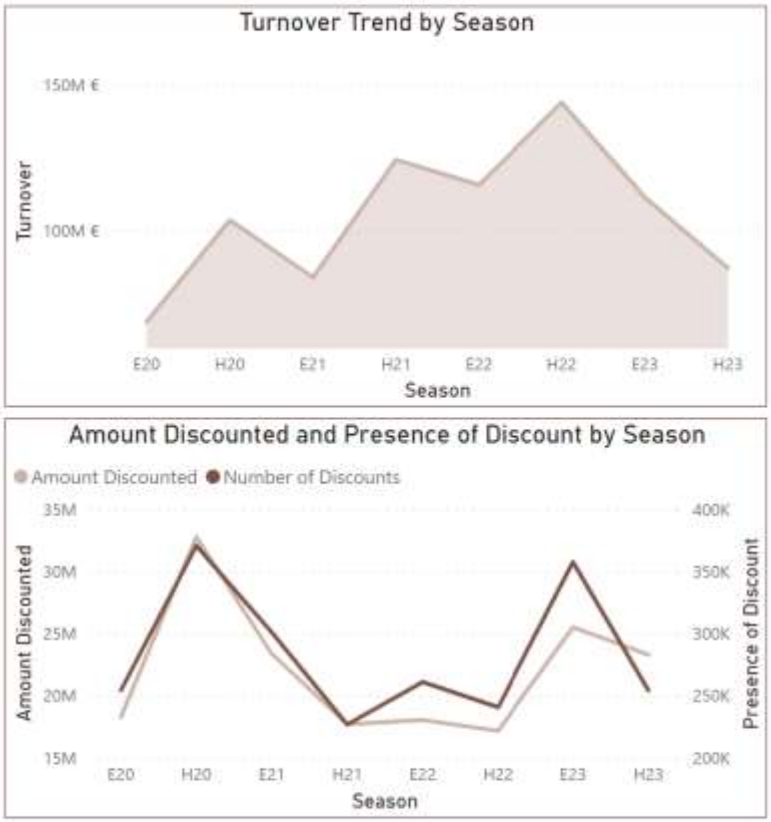
- H22 sales peak with no direct link to discount activity.
- E21 discount spike potentially influencing later sales.
- Turnover maintains despite varied discount levels.
- Post-discount reduction, sales stay steady initially.
- Lower discounts in E23 precede a turnover drop.



Great Britain identified as more discount-driven than France.

Market Sensitivity to Discounts - France

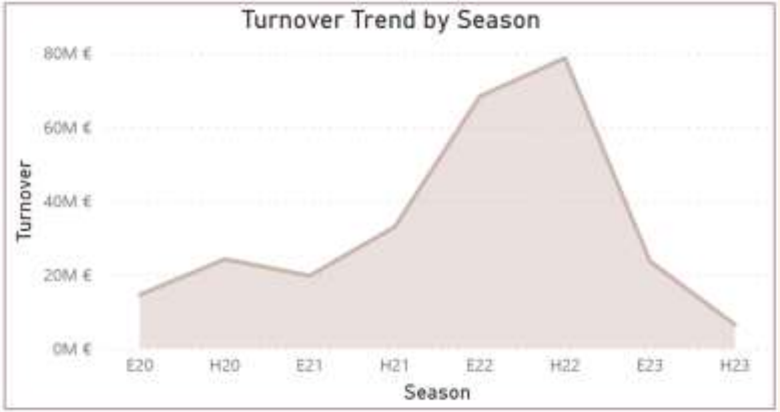
- Mixed responses to discounting across different seasons.
- Peak turnover coincides with high discounts in H22, suggesting some sensitivity to discounts.
- E21 shows high discounts without a corresponding increase in turnover, indicating other factors at play.
- E23's turnover decline, despite continued discounts, suggests a need for strategy reassessment.
- Evaluate discount effectiveness during peak seasons.



France exhibits variable discount sensitivity, which may be ***seasonally influenced.***

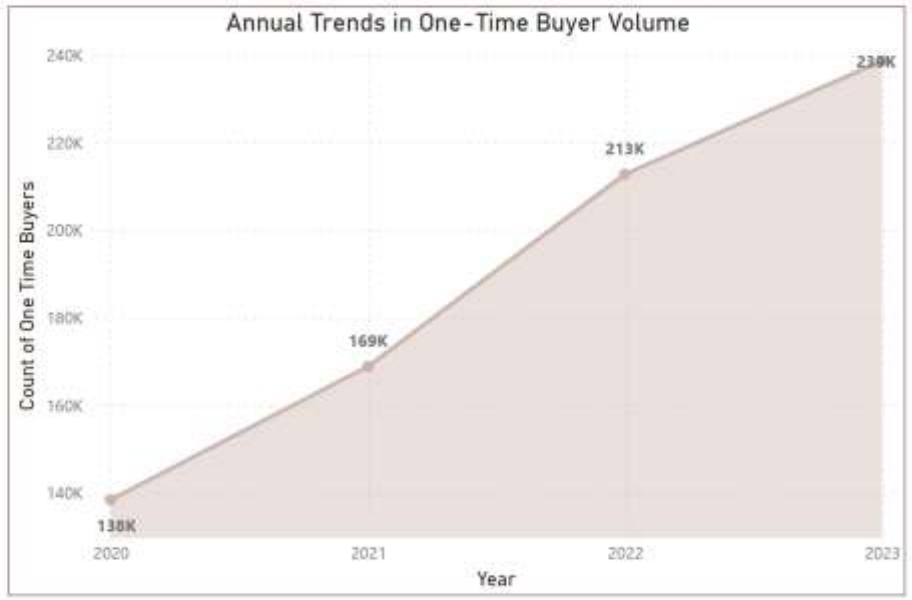
Casual Buyers are the Culprit?

- Casual buyers constitute 35% of total buyers in the customer-base, representing one-third.
- When discounts increased in H21, sales increased.
- Discounts for casual customers decreased starting from season E22.
- Post-2022, sales to casual buyers have experienced the sharpest decline.



Potential reasons include ***reduced marketing*** efforts and ***fewer discounts*** targeting this segment.

One-time buyers represent 60.7% of customer base



- One-time buyers from France account for 32.3% of total turnover.
- One-time buyers are 3.92 times more likely to be influenced by discounts.
- 71.58% of sales to one-time buyers occur in-store.
- France's tourism popularity boosts one-time buyer turnover.

Increase the *basket of one-time buyers.*

Important *remarks*

Seasonal variability

Noticeable differences between seasons

Discount amount and quantity

Number of discounts and amount of discounts affects sales

Frequency of purchases

How often do customers purchase

Product manufacturing country

Where is the product customers buy manufactured

Channel of purchases

Where do customers purchase the most

Further exploration of French Market

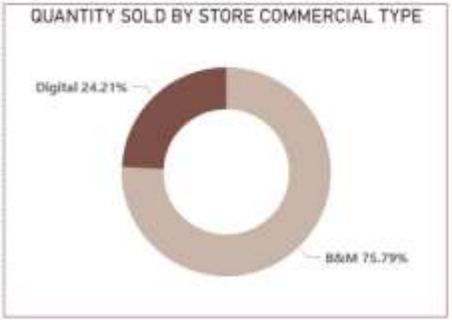
STORE *analysis*

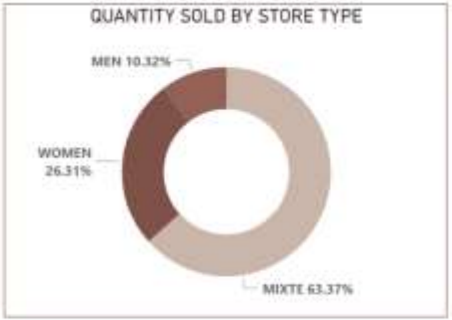
Store Overview – Year 2023

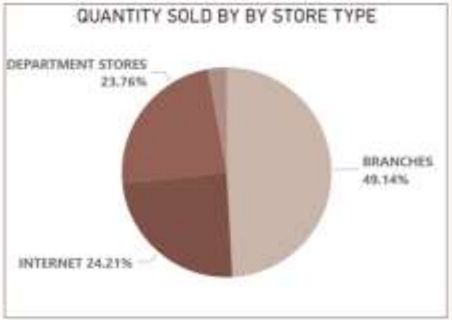
Total Turnover
355.02M €

Total Turnover France
257.53M €

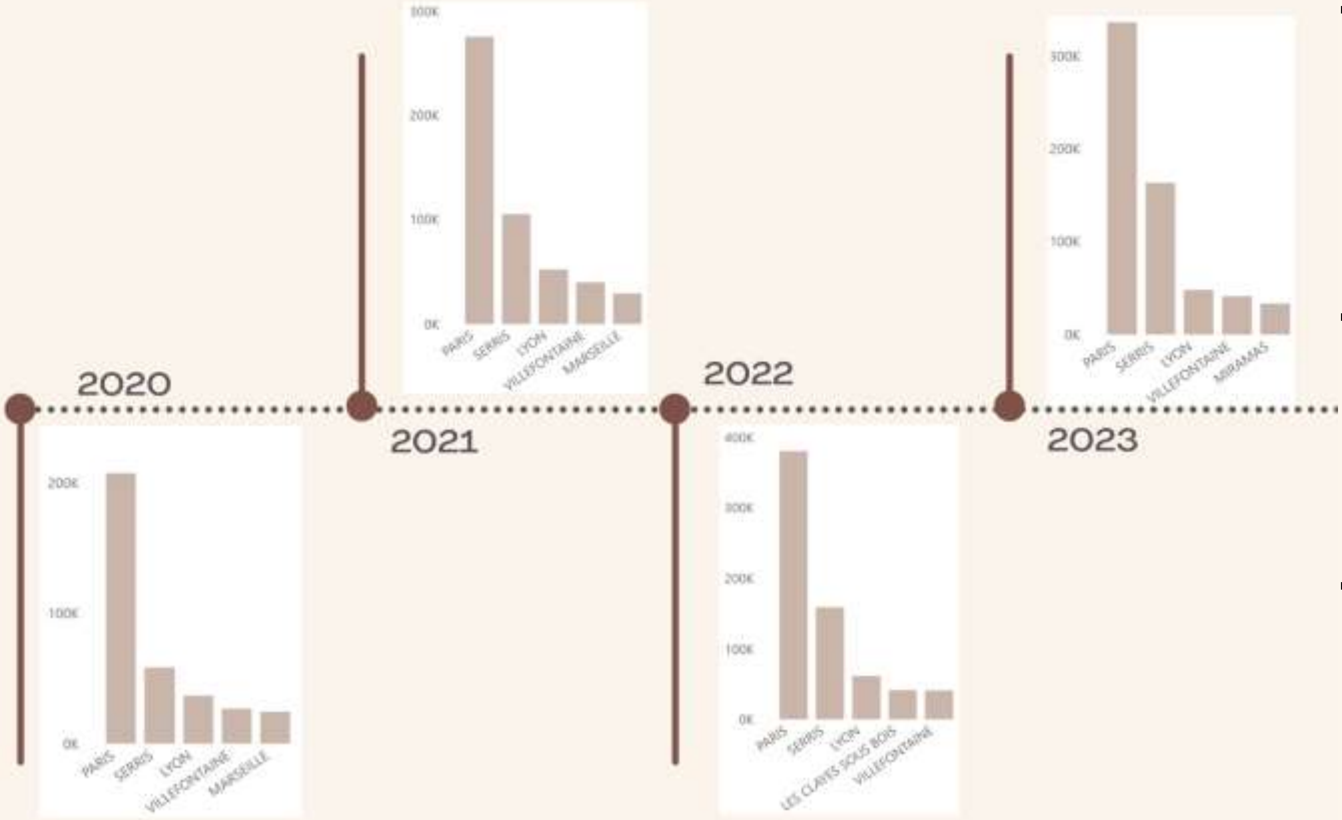
- France is the biggest market for Sandro
- France-based stores contribute 72.5% of sales.
- Digital sales account for 30%, predominantly from obsessed and reliable customer segments.
- Mixed stores account for the majority of the sales.
- Branches performed best, followed by Internet managed stores and Department stores







Top Cities in France by Quantity Sold by Year



- **Dominance of Paris:** Paris consistently shows the highest figures across all years, underlining its status as the most significant contributor to the metric being measured.

- **Emergence of Les Clayes & Miramas**: Notable is the emergence or significant increase in the quantity sold for Les Clayes and Miramas in 2022 and 2023

- **Across Cities**: While some cities like Villefontaine show variable figures, others like Serris maintain relatively consistent performance year over year.

CUSTOMER *analysis*

Behavior Pattern of Customers

Avg. Time to Second Purchase

89 Days

Avg. Customer Lifetime

185 Days

Returning Customers

40.49 %

Churn Customers

59.69 %

- **Second Purchase Opportunity:** Initiate quick engagement post-purchase to shorten the 89-day second purchase gap with personalized follow-ups.
- **Leveraging Customer Lifecycle**: Utilize the 185-day average lifecycle to build loyalty through exclusive rewards and incentives.
- **Customize Experiences:** Address the churn and non-churn rate with customized experiences and service improvements to convert one time-buyers into reliable customers.
- **Churn Rate Challenge**: Act on the 59.69% churn by pinpointing and resolving customer journey pain points.

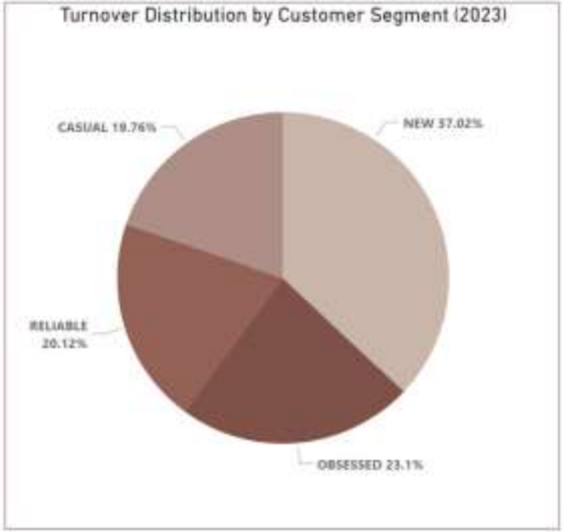
Enhance *loyalty* initiatives, and tackle churn to *solidify the customer base.*

Customer Segmentation

- Tested existing customer segmentation and it didn't match our results
- Did not use existing segmentation
- Created a new segmentation to further explore customer behaviour

SEGMENT	DESCRIPTION
Obsessed	Have purchased in at least 3 of the last 4 seasons + Have made >=2 purchases in the last season (OR) Have purchased in the last 4 seasons.
Reliable	Have bought in 2 or 3 of the last 4 seasons + >=1 purchase in the last season.
Casual	Have purchased in 2 of the last 4 seasons but not consecutively (OR) there is more than one season so consecutively.
Silent	No purchases in the last 4 seasons.
New	Have made their first purchase in the current season (OR) in the previous season.

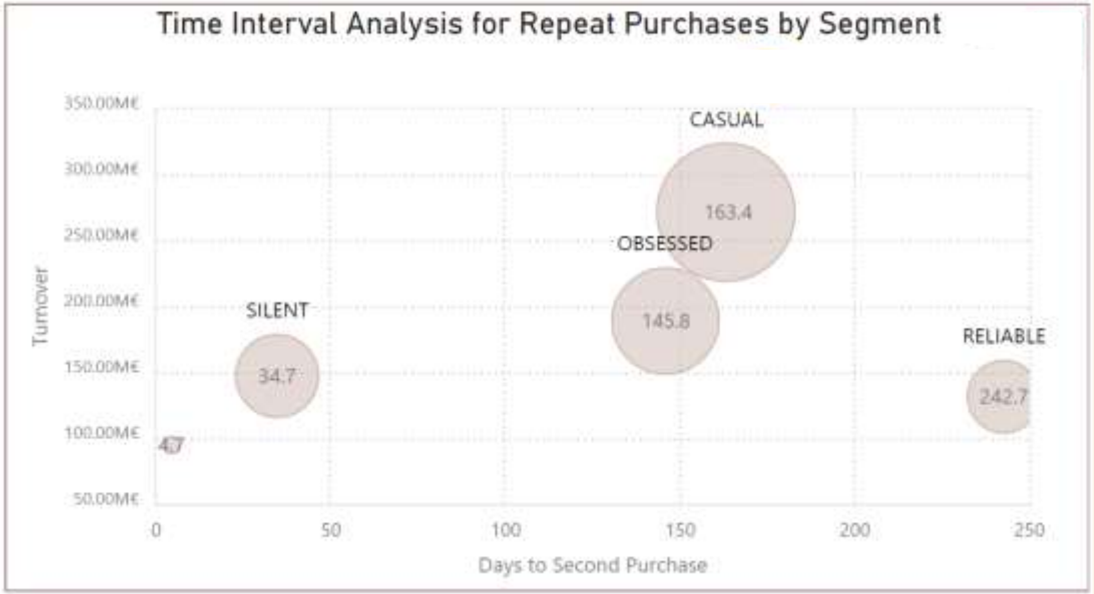
Behavior Pattern of Customers



- **New Segment Dominance:** Largest turnover share; highlights the importance of the onboarding experience.
- **Reliable Contribution:** Significant portion; underscores the value of steady customers.
- **Obsessed Segment:** Commands a notable percentage; leverage for high-value engagement.
- **Casual Segment:** Smaller slice; potential to grow through targeted marketing strategies.

New customers dominate the turnover distribution, highlighting a strong influx of fresh business and the potential for growth in **customer loyalty programs.**

Behavior Pattern of Customers



- **New Customers:** Indicate strong early engagement; consider strategies to maintain momentum.
- **Silent Segment:** Reflects potential untapped opportunity; targeted re-engagement may be key.
- **Casual Buyers:** Could benefit from personalized incentives to enhance loyalty.
- **Obsessed Segment:** Ideal candidates for exclusive rewards and brand ambassadorship programs.
- **Reliable Segment:** Suggests reliability but room for more frequent interactions.

Important *remarks*

Engagement Focus

Leverage the early engagement of new customers and re-ignite the Silent Segment with strategic communication.

Strategic Retention

Address churn with targeted experiences.

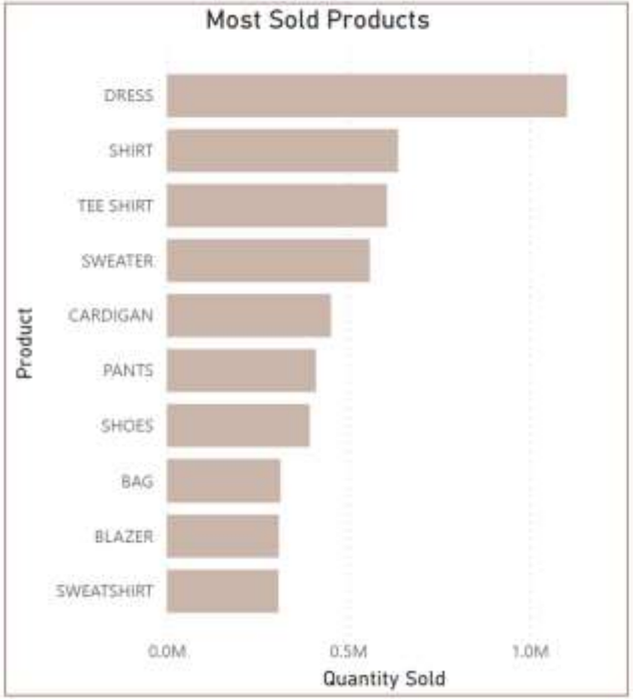
Churn Minimization

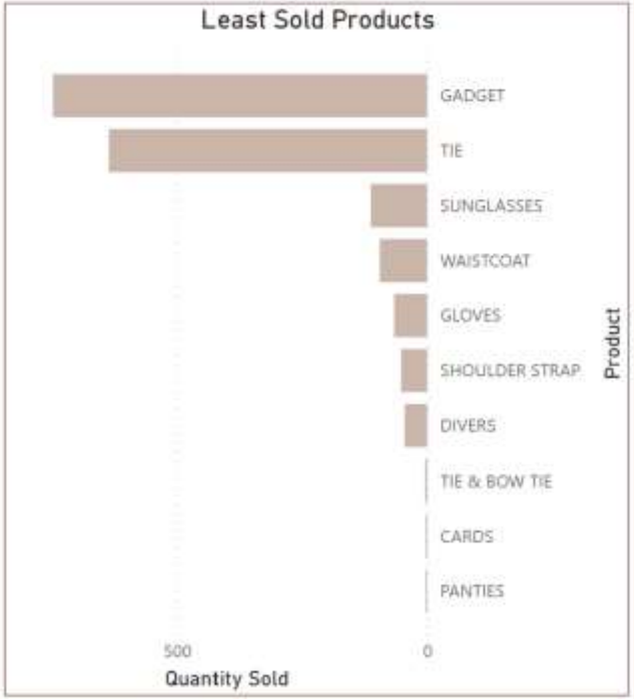
Focus on converting silent and casual segments to reduce churn and bolster the reliable customer base.

Extend the average customer lifetime with targeted retention strategies for sustained revenue.

PRODUCT
analysis

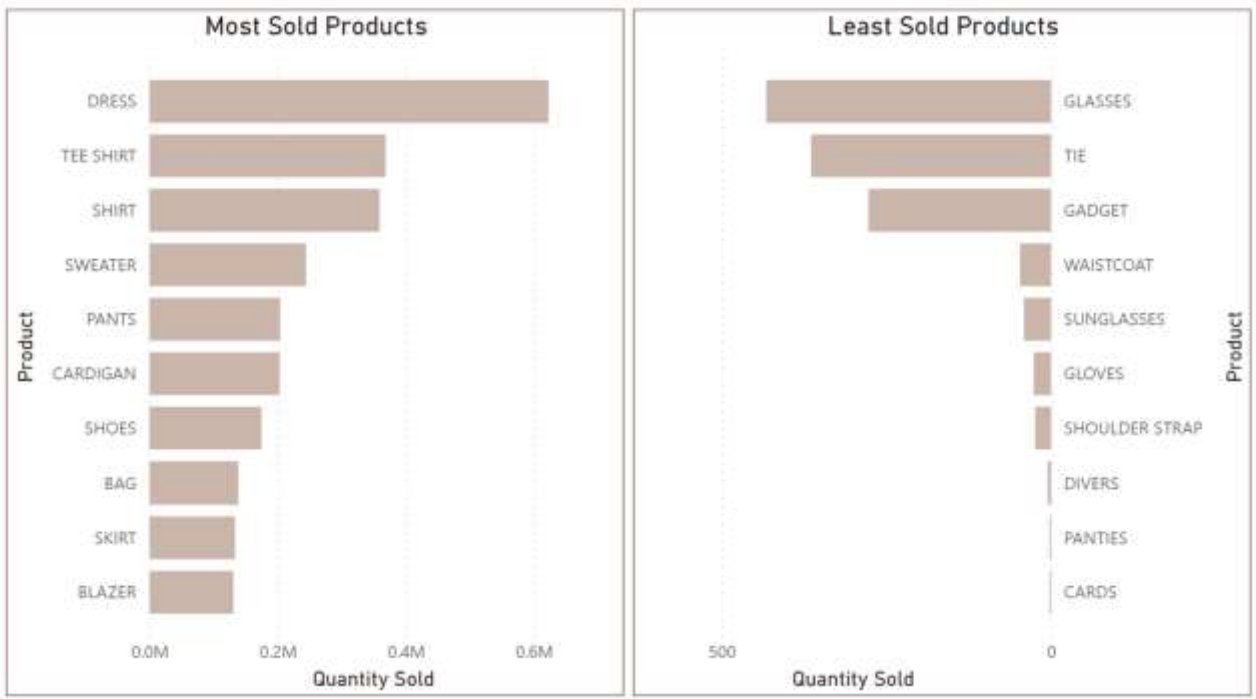
Product Performance Overview – Top and Bottom Performers for the Past 4 years





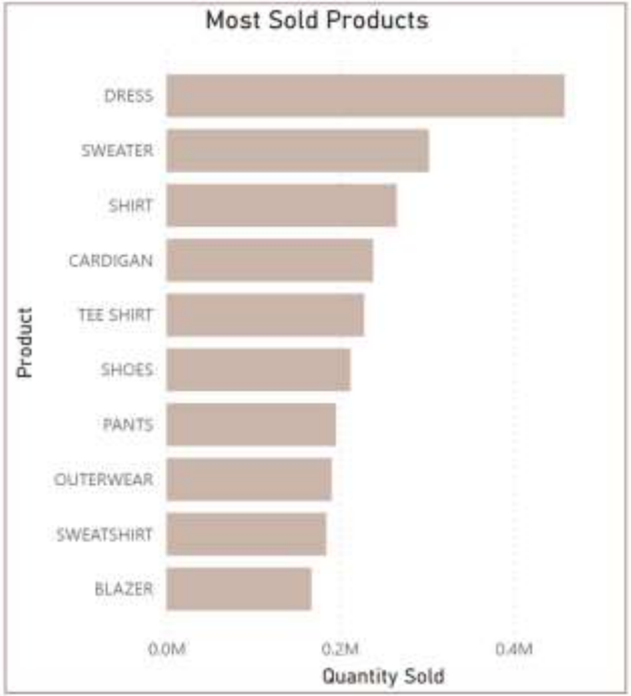
- Dresses and shirts consistently lead sales year-over-year.
- Accessories like ties, gadgets, and waistcoats remain least popular.
- Need further analysis for seasonal fluctuations.

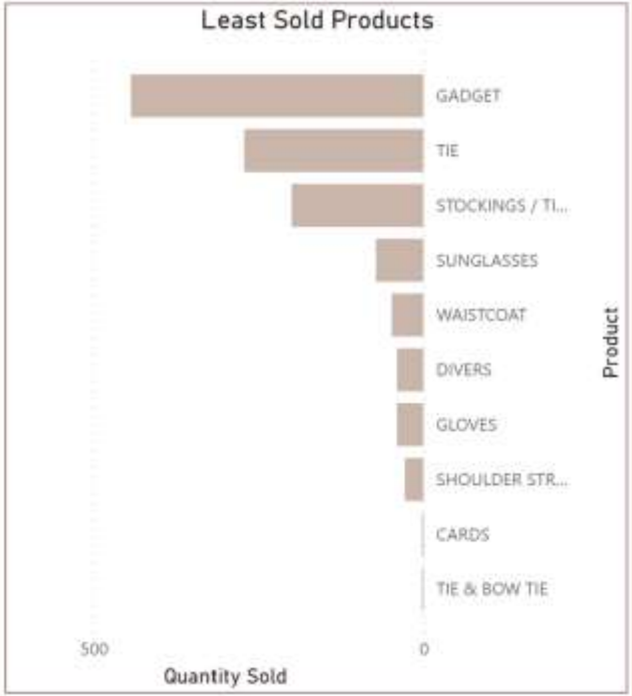
Summer Favorites and Underperformers



- Light apparel such as T-shirts and dresses favored in summer.
- Gadgets and formal accessories less in demand during warmer months.
- Less demand for items like sunglasses and waistcoats, despite being summer-related.

Winter Season Product Performance





- Sweaters and cardigans surge in sales during winter, reflecting seasonal needs.
- Winter accessories like gloves are among the least sold items.

Important *remarks*

Core apparel like dresses and shirts sustain year-round popularity.

Their adaptability to both seasons makes dresses and shirts year-round popular

Sweaters gain popularity in winter

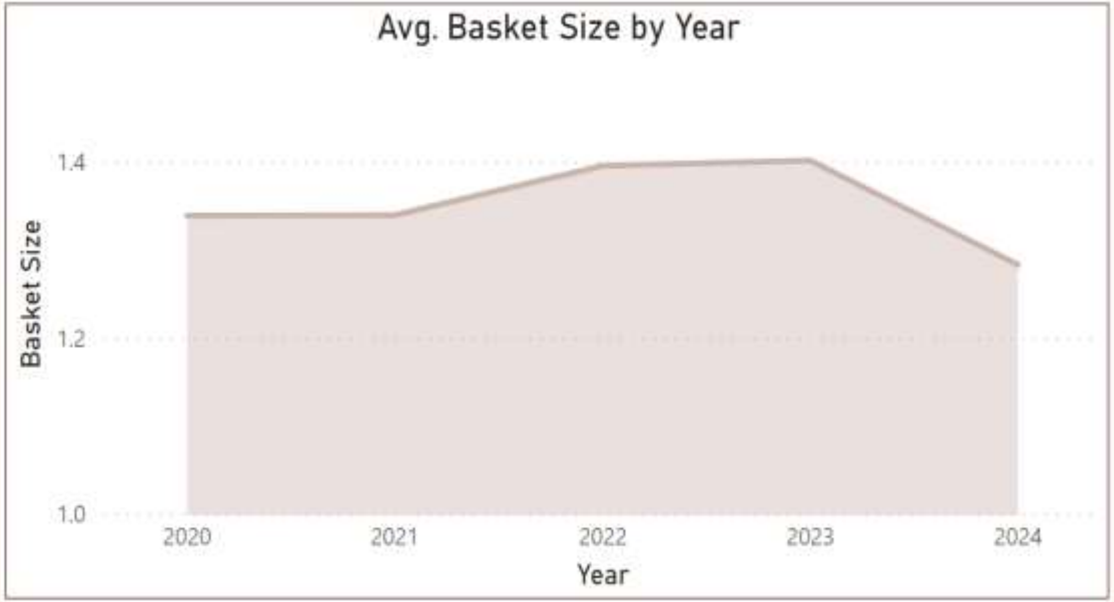
Sweaters increase winter sales

Accessories underperform

The accessory range may not resonate as strongly with SANDRO's target demographic as their signature clothing lines do.

Some seasonal influence in product demands

Basket Size Remains Small and Stable Over Time



Average Basket Value

230.08 €

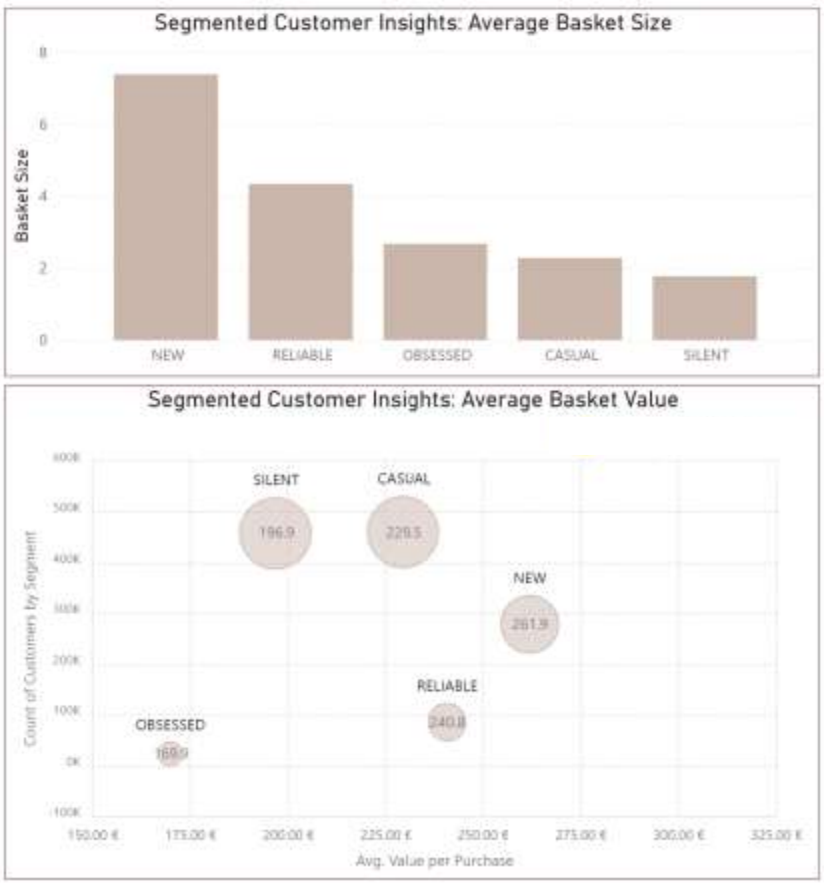
Average Basket Size

~1

- On average, customers buy about 1 item per purchase
- On average, for each purchase, they spend 230€.

Need to increase average basket size.

“NEW” Customers are Buying More Items per Purchase



Average Basket Value

261.90 €

Average Basket Size

~7

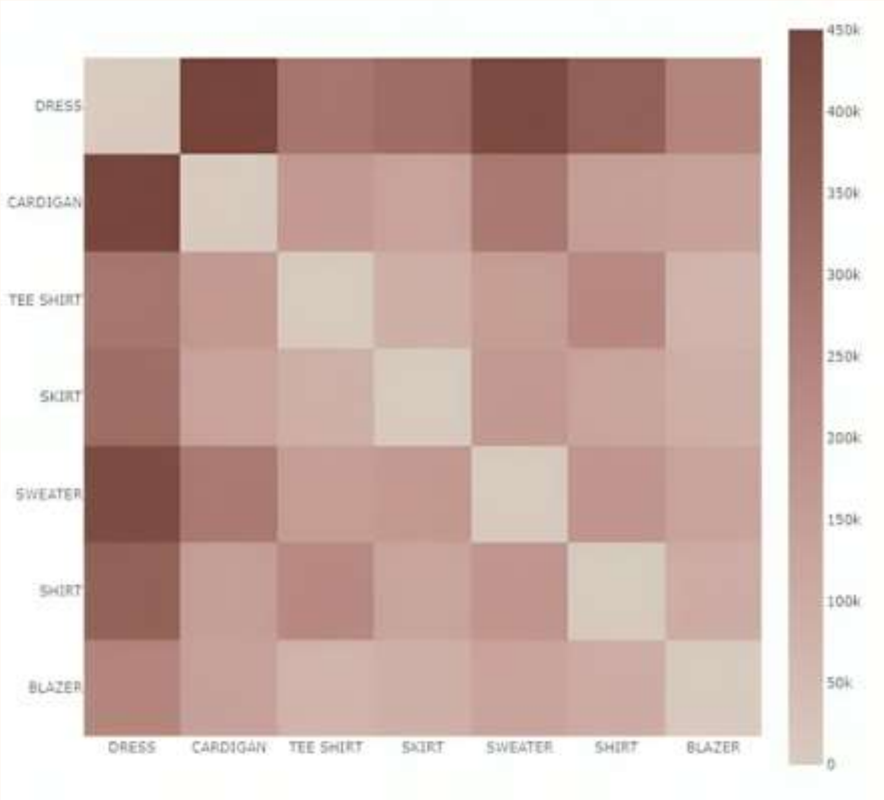
Convert New customers *to Reliable. They provide high value.*

Retain them with exclusive offers and loyalty programs.

Product Affinity and Cross-Selling Opportunity Matrix

Top 3 Products appearing together in the same basket

- Cardigan and Dress
- Dress and Sweater
- Dress and Shirt



- **New Opportunities:** Potential for Cross-Selling and Upselling.
- **Optimizing Operations:** Inventory and Supply Chain Management.
- **Driving Sales:** Marketing and Promotional Strategies.

Important *remarks*

Increase basket size

Number of products per purchase is low

Strategies to retain new customers

New customers bring high revenue to the business

Leverage cross-selling opportunity

Basket size can be increased by putting products together by affinity

Number of products purchased and product type is important

DATA *overview*

DATA *nuances*

Customer	Customer Identification
Sales	Purchase Count in Winter 23
	Purchase Count in Summer 23
	Purchase Count in Winter 23
Customer Touchpoints	Time of first purchase
	Time of second purchase
	Time of final purchase
Customer Segment	Customer Segmentation

Customer universe comprises of 1.2M customers who have made sales between the years 2022 and 2024.

Ticket	Ticket Identification
Sales	Time of purchase
	Sale/ Return
	Sale amount in Euros
	Discount
Product	Product
	Product Family
Customer	Customer
	Age of the Customer
Store	Store
	Location of the Store

CUSTOMER *data*

Customer Base: 1.3M

Age Range: 16-89

Origin Cities: 238

Customer Segments: Obsessed, Reliable, Silent, Casual, New

Customer	Customer Identification
Sales	Purchase Count in Winter 23
	Purchase Count in Summer 23
	Purchase Count in Winter 23
Customer Touchpoints	Time of first purchase
	Time of second purchase
	Time of final purchase
Customer Segment	Customer Segmentation

SALES *data*

Ticket	Ticket Identification
Sales	Time of purchase
	Sale/ Return
	Sale amount in Euros
	Discount
Product	Product
	Product Family
Customer	Customer
	Age of the Customer
Store	Store
	Location of the Store

Time duration: Feb-20 to Feb-24

Total Cities: 266

Total Stores: 676

Analysis: Ticket Level

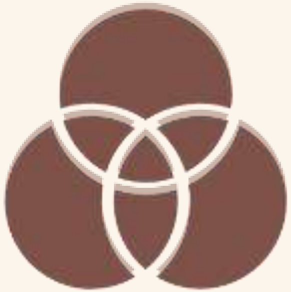
Feature *selection*

Exploratory Data Analysis

Identified data distribution and potential predictors of churn.
Highlighted key customer behaviors and preferences.

Correlation Analysis

Identified redundant features and those with strong predictive power.
Removed highly correlated features to reduce redundancy and complexity.



Some *selected features*

Total Number of Purchases

Total Discount Amount

Total Spend per Purchase

Email Opt-in and Reachable

Time from First to Last Purchase

Mobile Opt-in and Reachable

See appendix for full list of features

Model Training and *Optimization*

SEASONS FOR TRAIN DATA

E22
2022-02-01
-
2022-07-31

H22
2022-08-01
-
2023-01-31

E23
2023-02-01
-
2023-07-31

TEST DATA

H23
2023-08-01
-
2024-01-31

Chosen *Algorithm*

XGBoosting combines multiple simple models to create a comprehensive and accurate prediction model.

01

Starts with a simple model and makes predictions about customer behavior.

02

Identifies errors in predictions and uses this information to improve in the next round

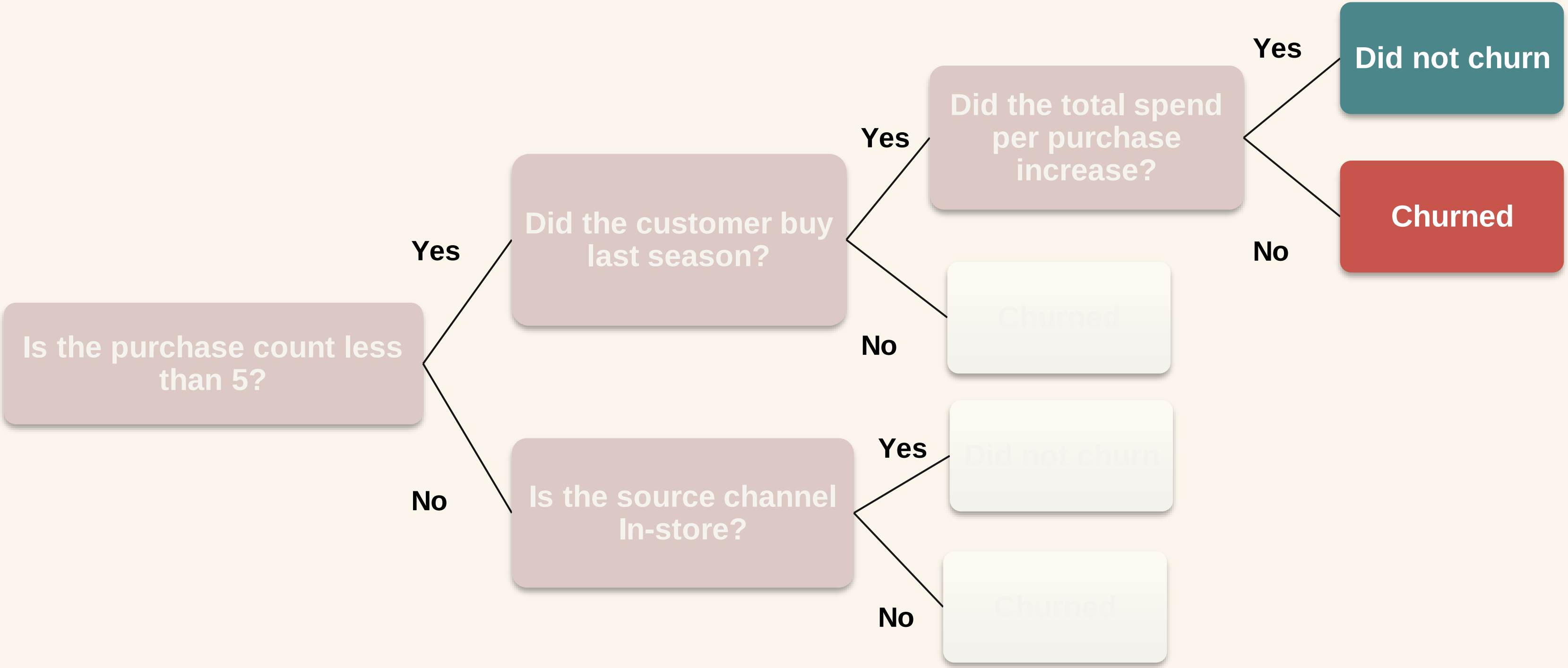
03

Repeats the process, each time refining its strategy based on previous errors, to make more accurate predictions.

04

Ensembles all the predictive power from multiple models to predict which customers are most likely to churn

Example *case*



Why XGBoosting?

ENSEMBLE LEARNING

Combines multiple weak models for stronger accuracy.

LEARNING FROM MISTAKES

Learns from previous errors, adjusting to improve future accuracy.

FEATURE IMPORTANCE

Identifies key factors driving decisions or outcomes.

FLEXIBILITY

It adapts to various tasks and business challenges

EFFICIENCY

Fast, efficient processing of large datasets.

Model *performance*

Precision	Recall	F1-Score
87%	**82%**	**84%**
Out of all instances predicted as churned customers, **87%** have actually churned	Out of all actual churned customers, **82%** were correctly identified by the model.	The model has achieved a **good balance** between precision and recall for the churn.

Confusion Matrix

We predicted the churn and the customer actually churned

We predicted the churn and the customer didn't churn

		Actual Values	
		Churned	Not Churned
Predicted Values	Churned	178463	38773
	Not Churned	27627	26666

We predicted no churn and the customer churned

We predicted no churn and the customer didn't churn

Implications for *Sandro*

Targeted Retention

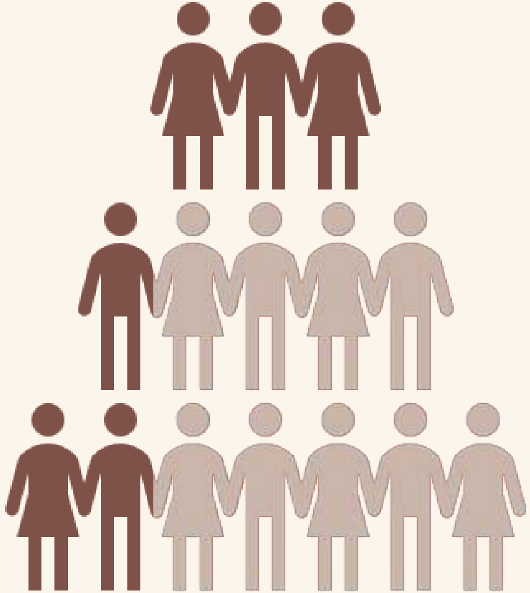
Engage at-risk customers proactively to prevent churn.

Revenue Strategies

Reallocate budget from acquisition campaigns to retention programs proven to have higher ROI for existing customers.

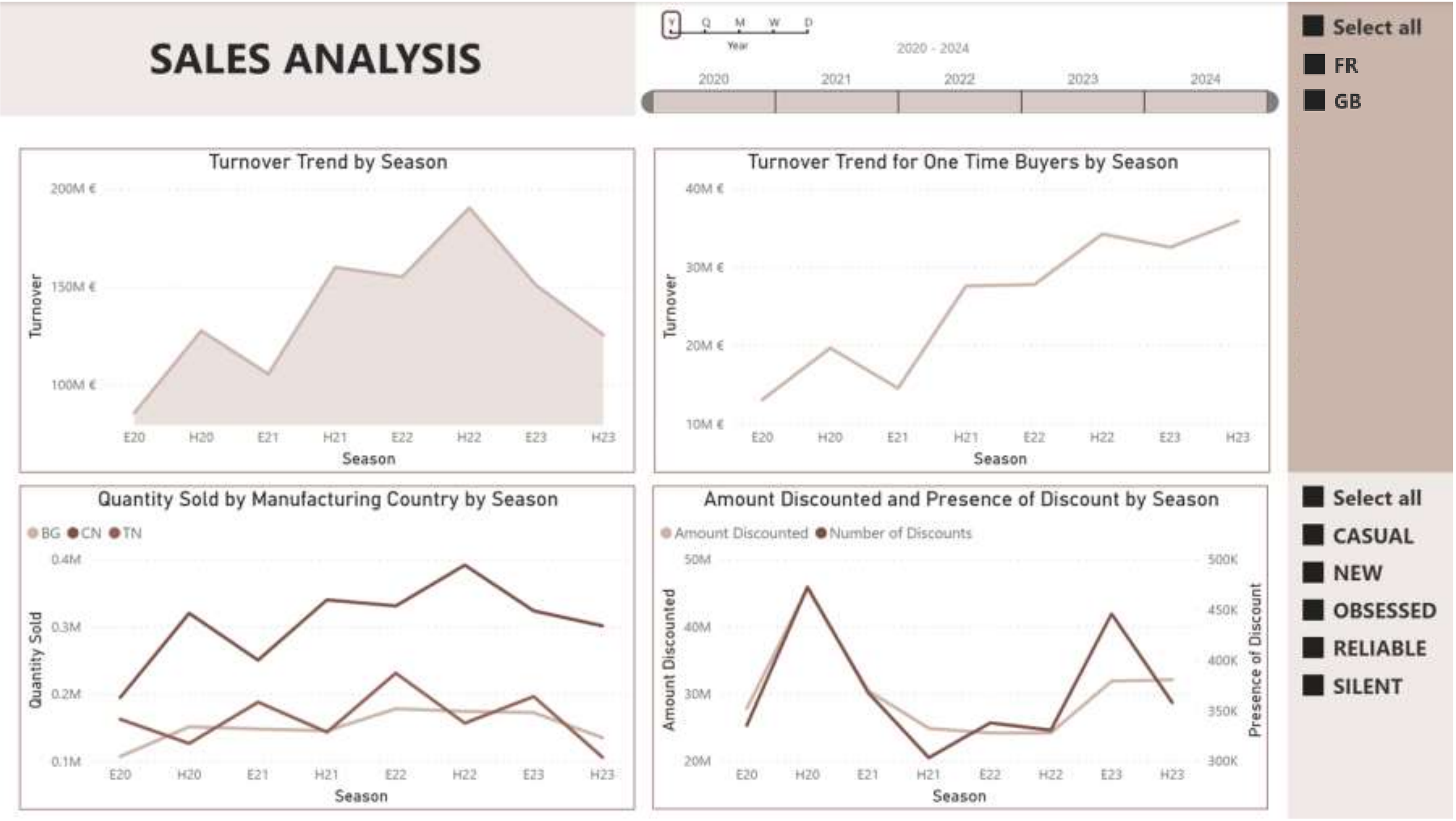
Product and Pricing Innovation

Use churn trends to identify which product features or pricing structures may need adjustment to retain customers.

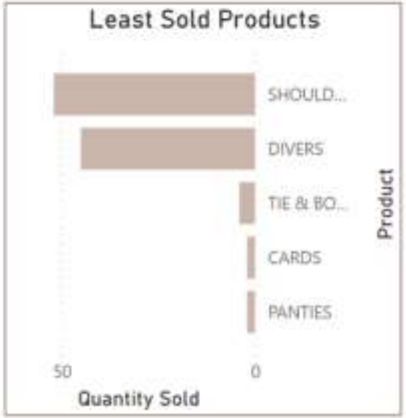


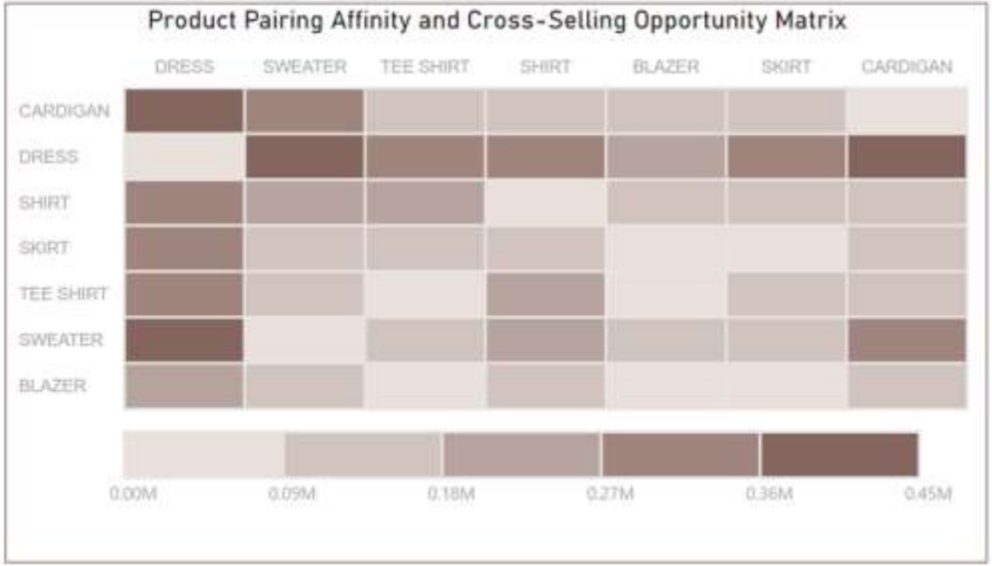
PBI Dashboards

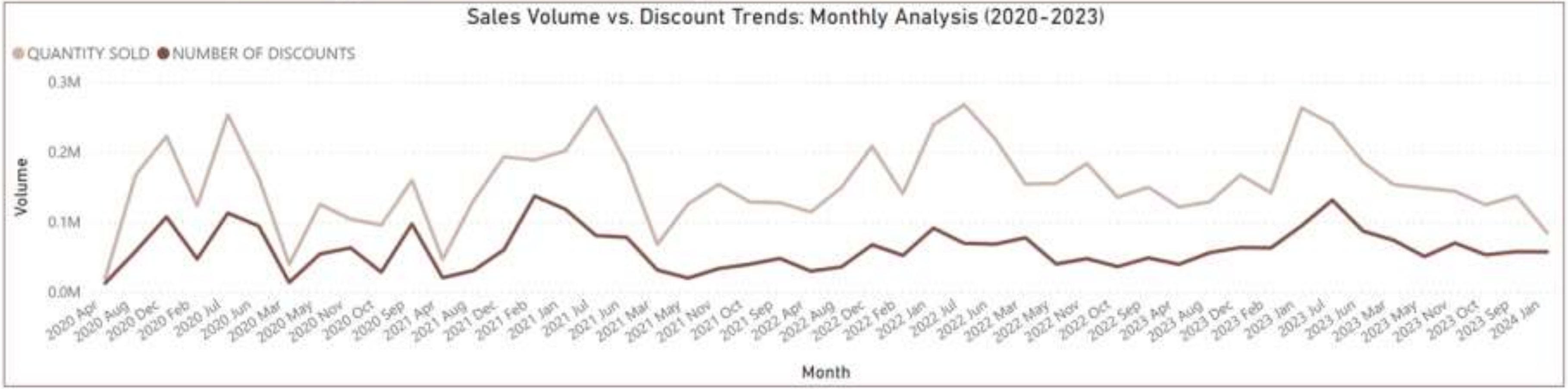
The following slides are screenshots of PBI interactive dashboards. We are attaching screenshots due to large file size.


SALES ANALYSIS
Y Q M W D
Year
2020 - 2024
2020 2021 2022 2023 2024
Select all
FR
GB
Turnover Trend by Season
200M €
150M €
100M €
Turnover
E20 H20 E21 H21 E22 H22 E23 H23
Season
Turnover Trend for One Time Buyers by Season
40M €
30M €
20M €
10M €
Turnover
E20 H20 E21 H21 E22 H22 E23 H23
Season
Quantity Sold by Manufacturing Country by Season
BG CN TN
0.4M
0.3M
0.2M
0.1M
Quantity Sold
E20 H20 E21 H21 E22 H22 E23 H23
Season
Amount Discounted and Presence of Discount by Season
Amount Discounted Number of Discounts
50M
40M
30M
20M
Amount Discounted
500K
450K
400K
350K
300K
Presence of Discount
E20 H20 E21 H21 E22 H22 E23 H23
Season
Select all
CASUAL
NEW
OBSESSED
RELIABLE
SILENT

ITEMS ANALYSIS





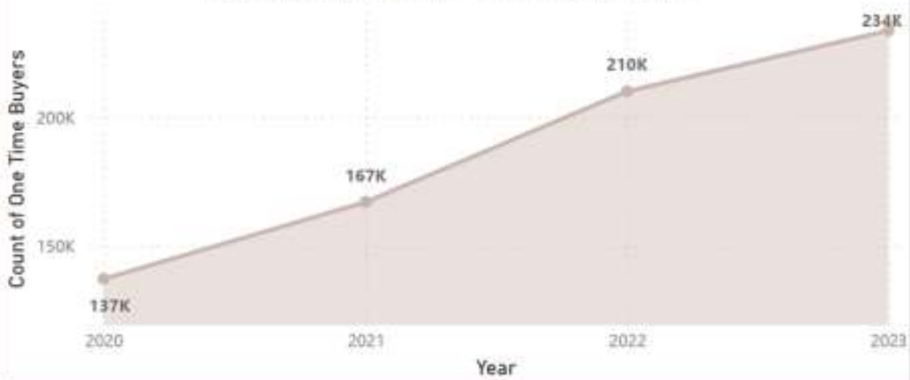


ONE TIME BUYERS

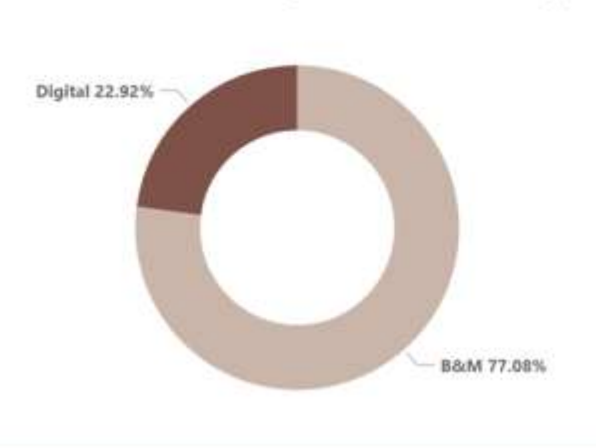
Avg. Basket Size	Total Turnover
3.36	560.64M€

% of Total Customers	Marketing Impact
59.87	4.08

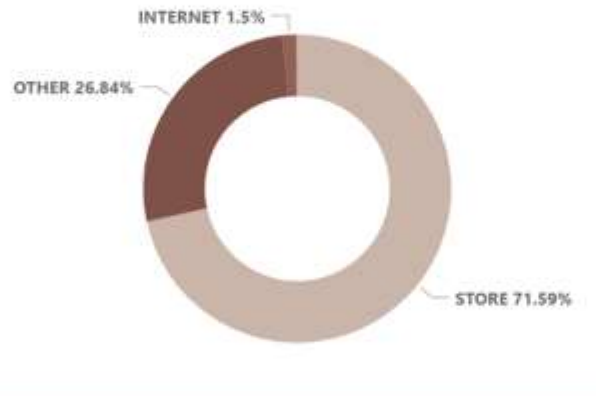
Annual Trends in One-Time Buyer Volume



Purchases Breakdown by Store Commercial Type



Segmentation of One-Time Buyers Across Source Channels



- Select all
- FR
- GB

BASKET ANALYSIS

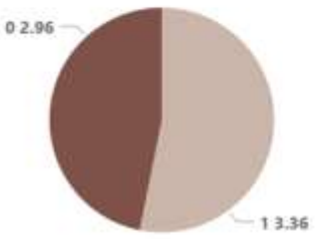
Avg. Amount per Purchase

230.08 €

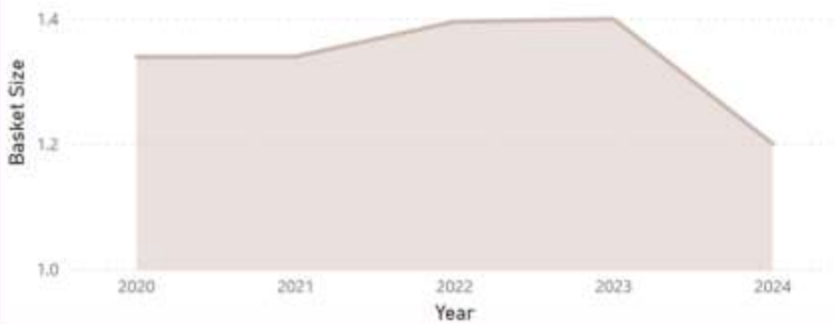
Avg. Basket Size

1.36

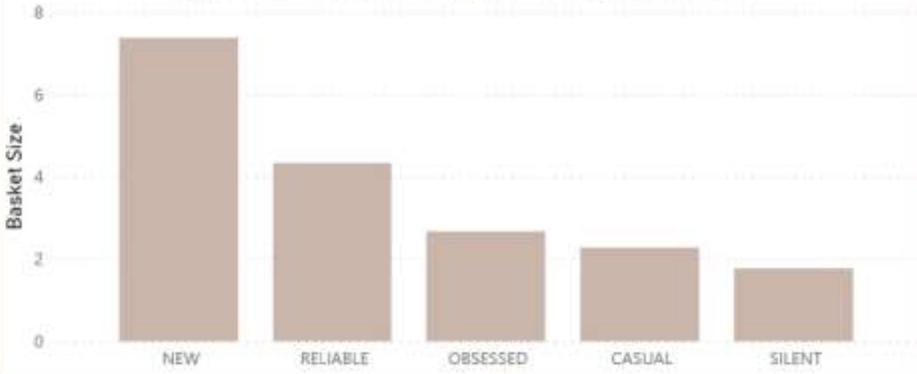
Comparison One Time Buyer vs Others - Basket Size



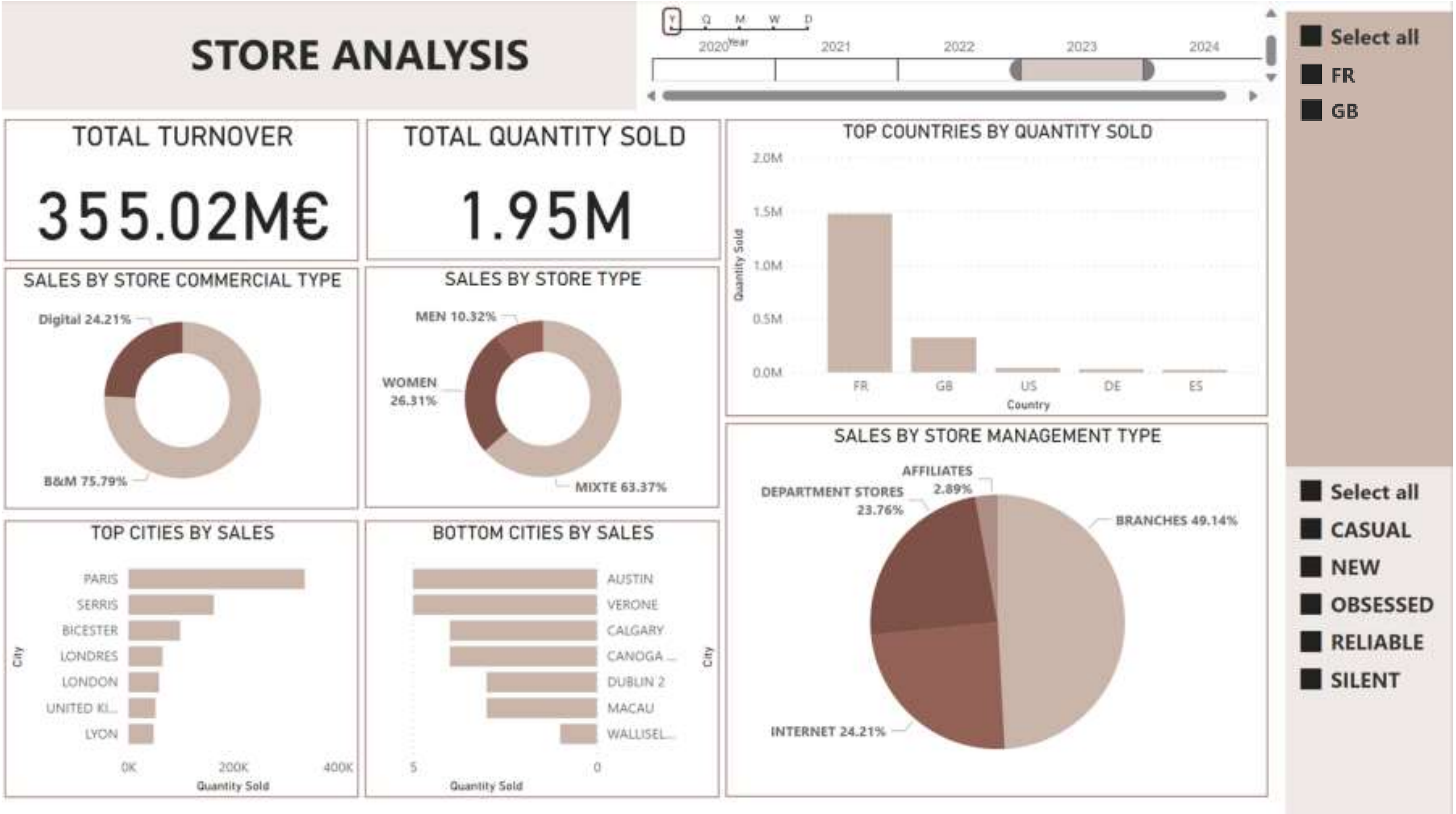
Avg. Basket Size by Year



Segmented Customer Insights: Average Basket Size



Segmented Customer Insights: Average Basket Value


STORE ANALYSIS
Y Q M W D
Year
2020
2021
2022
2023
2024
Select all
FR
GB
TOTAL TURNOVER
355.02M€
TOTAL QUANTITY SOLD
1.95M
TOP COUNTRIES BY QUANTITY SOLD
2.0M
1.5M
1.0M
0.5M
0.0M
Quantity Sold
FR
GB
US
DE
ES
Country
SALES BY STORE COMMERCIAL TYPE
Digital 24.21%
B&M 75.79%
SALES BY STORE TYPE
MEN 10.32%
WOMEN 26.31%
MIXTE 63.37%
SALES BY STORE MANAGEMENT TYPE
AFFILIATES 2.89%
DEPARTMENT STORES 23.76%
BRANCHES 49.14%
INTERNET 24.21%
Select all
CASUAL
NEW
OBSESSED
RELIABLE
SILENT
TOP CITIES BY SALES
PARIS
SERRIS
BICESTER
LONDRES
LONDON
UNITED KI...
LYON
City
0K
200K
400K
Quantity Sold
BOTTOM CITIES BY SALES
AUSTIN
VERONE
CALGARY
CANOGA ...
DUBLIN 2
MACAU
WALLISEL...
City
5
0
Quantity Sold

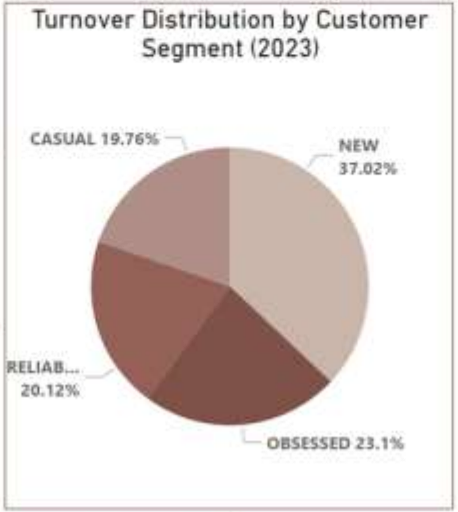
PURCHASE BEHAVIOR

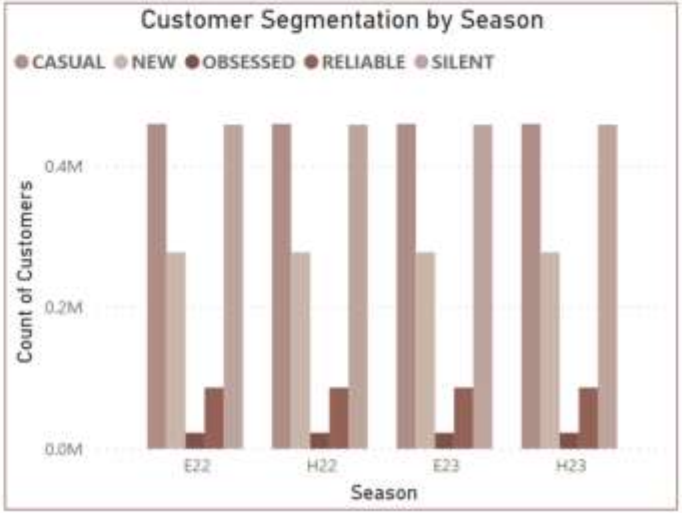
Time to Second Purchase (Days)

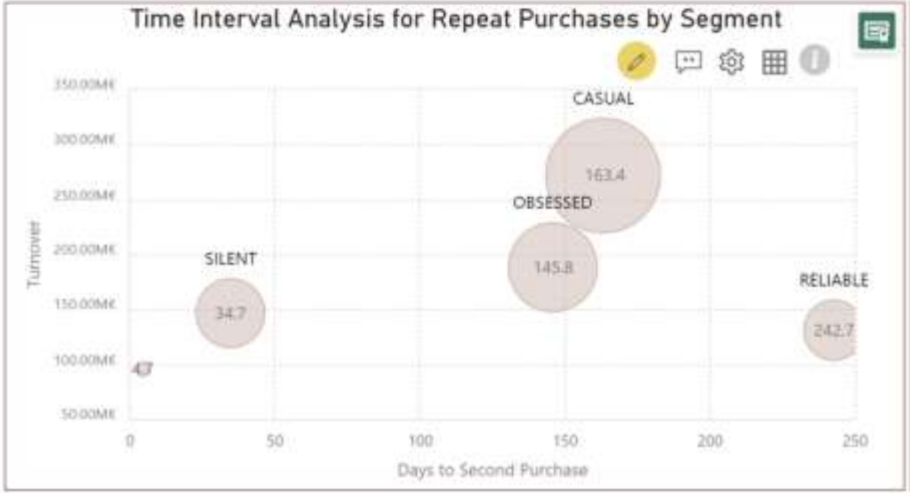
89.52

Percentage of Returning Customers

40.49%







THANK YOU!