

# PRODUCT AFFINITY ANALYSIS

The purpose of this job aid is to show the analysis Nielsen uses to discover the interaction between products when they are bought together in one shopping trip; essentially, a basket composition analysis. This analysis helps you learn how likely your customers are to purchase specific product groups, brands, flavors or pack sizes with your target products together in one shopping trip.

## What are customers purchasing in one basket

The Product Affinities Analysis provides insights into what customers purchase together in a shopping trip; for example, how they are composing specific meals or fulfilling a larger weekly shopping trip. Essentially, it provides a weighted score to identify the products most commonly bought together. This ensures you uncover the highest correlating products and not just a list of the most frequently purchased products.

The Product Affinities Analysis has multiple use cases. The most common use case is discovering a customer's basket size when two products are bought together, proving the combination is building bigger baskets or more premium priced baskets.

## Answer Critical Business Questions

- What are the products most likely to be bought together in one basket?
- How many customers are buying my competitors products together with my own during a specific time period?
- Which products should I consider for a cross category promotion?
- Are there geographical or demographical differences between product affinities?

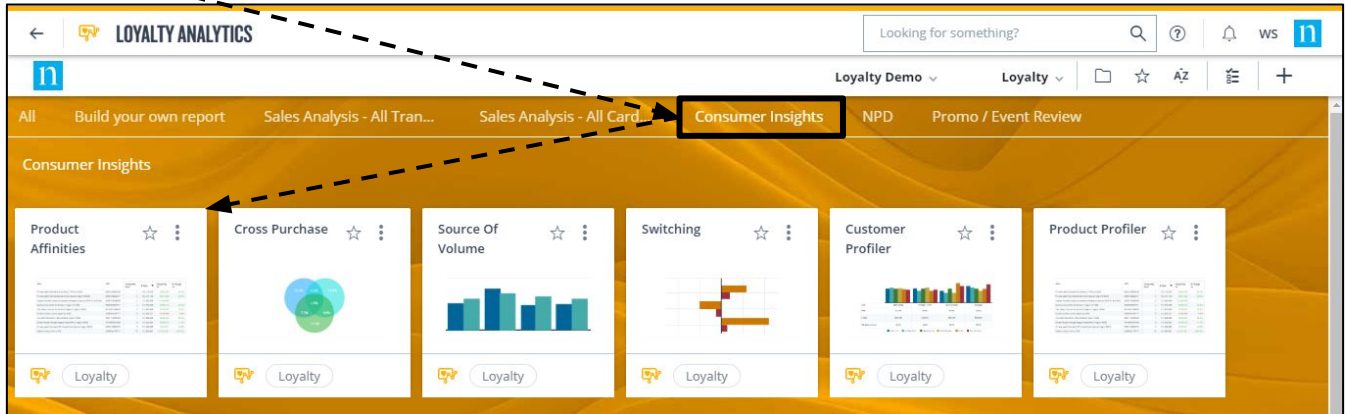
## Key Benefits

- Gain knowledge of the basket composition in different geographical or customer profile scenarios.
- Shows what products have potential to cross merchandise or cross promote.
- Determine what specific customer groups are purchasing together with your products.
- Determine if a specific product combination is contribution to HALO effects for the retailer.
- Prove specific product combinations are valuable for both the retailer and the manufacturer.

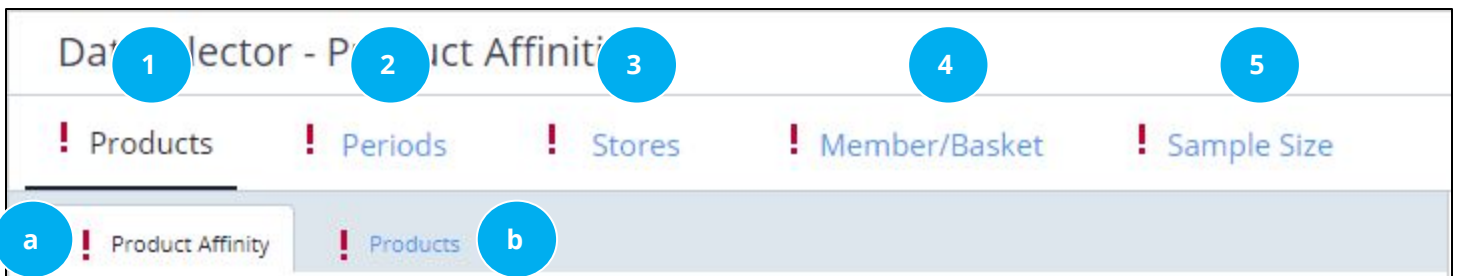
## PRODUCT AFFINITY ANALYSIS

### SETUP YOUR PRODUCT AFFINITY ANALYSIS

Navigate to the list of available templates and choose the Product Affinities template listed under Customer Insights.



### SELECT THE DATA REQUIRED FOR YOUR REPORT



1. **Products:** Select the product grouping you want to analyze the affinity for; choose the product groupings either from the hierarchy or alternatively use Sum and Group By to select a combination of product characteristics.
  - a. **Product Affinity:** Select the comparison products in this sub-dimension. Note: these are the products you want to compare your target product with.
  - b. **Products:** Select your target or subject products in this dimension.
2. **Periods:** Select any time period you are interested in.
3. **Stores:** Select any store group for this report.
4. **Customer Basket:** Select any value you are interested in.
5. **Sample Size:** Run the report on 10% or 100%.

Tip: choose 10% to speed up the report, once you have the data needed rerun on 100% if required.

### TIPS & WATCHOUTS

1. Look for products with a high affinity score; sort the affinity score column by clicking the fact label. The fact takes into account both the Affinity Lift Index and the Basket Penetration and naturally lowers the importance of products bought with high frequency.
2. When running a Product Affinities report, avoid selecting the target product category in the comparison product section (if possible). This could skew the Affinity Index and score towards each other in the output.
3. If there is a need to run multiple subjects products, select up to a maximum of five.

# PRODUCT AFFINITY ANALYSIS

## DATA & FACT DEFINITIONS (P1)

Data Selections		Basket KPI Table							
Stores	Total Store	Section Code & Desc	1	2	3	4	5	6	7
Member/Baskets	All Transactions		% Subject Product Baskets Containing...	% All Baskets Containing Comparison Product	Affinity Lift Index	Affinity Score	Value of Baskets containing Both Products	Value of Baskets Containing Comparison...	Spend Index
Subject Product	01002 Laundry								
		+ 01005 Paper Products	14.9	2.6	580.2	8.1	33.25	17.45	68.6
		+ 01001 Pet	10.9	2.7	404.0	5.3	31.04	15.87	70.4
		+ 01004 Food Wrap & Storage	5.3	1.0	511.2	4.4	36.82	17.37	76.3
		+ 01010 Bath & Shower	3.3	0.5	728.7	4.4	38.99	19.67	71.3
		+ 02022 Hot Beverages	9.4	2.6	357.3	4.4	37.71	17.07	79.4
		+ 02023 Cereals & Morning Snac...	8.8	2.5	353.2	4.2	38.15	16.76	81.9
		+ 13008 Fresh Veg	16.0	6.2	256.9	4.2	36.06	15.79	82.2
		+ 14001 Butter & Spreads	8.9	2.5	348.6	4.2	40.53	18.22	80.0

- % Subject Product Baskets Containing Comparison Product** : % of target product tickets which also contain the comparison product; for example 14.9% of tickets containing Laundry detergent are also containing Paper Products.
- % All Baskets Containing Comparison Product**: % Of all tickets bought in the selected, Store, Customer Segment, Period combination containing the comparison product; for example 2.6% of all tickets contain Paper Products.
- Affinity Lift Index**: Index of Fact 1 vs Fact 2; in this example  $(14.9\%/2.6\%)*100=580.2^*$
- Affinity Score**: Statistical score which combines the ticket penetration of the comparison product with the lift index. An simplified example calculation is provided in the next section.
- Value of Baskets Containing both Products**: Total Spend on all items in a ticket when both Target and Comparison product were in the basket; For example the average total spend on a ticket containing both Laundry detergent and Paper products was 33.25.\*
- Value of Baskets Containing Comparison Products**: Total Spend on all items in a ticket when only the Comparison product was in the basket; For example the average total spend on a ticket containing laundry detergent was 17.45.\*
- Spend Index**: Basket Sales Affinity Index, Index of Fact 5 vs Fact 6 compared to the collective Spend Index; in this example,  $(33.25/17.45)/277.9*10000= 68.6^{**}$ .

\*Note: all numerical values are rounded for front end user experience. The Index displayed is based on the unrounded backend numbers; on 11 decimals.

\*\*The total line on the report is always the bottom line. Scroll down to the bottom of your Affinities report to see the total.

# PRODUCT AFFINITY ANALYSIS

## THE PRODUCT AFFINITY SCORE

Basket KPI Table								
Section Code & Desc	01002 Laundry Product Affinities				01002 Laundry Basket Value KPI's			
	% Subject Product Baskets Containing...	% All Baskets Containing Comparison Product	Affinity Lift Index	Affinity Score	Value of Baskets containing Both Products	Value of Baskets Containing Comparison...	Spend Index	
01005 Paper Products	14.9	2.6	580.2	8.1	33.25	17.45	68.6	
01001 Pet	10.9	2.7	404.0	5.3	31.04	15.87	70.4	
01004 Food Wrap & Storage	5.3	1.0	511.2	4.4	36.82	17.37	76.3	
01010 Bath & Shower	3.3	0.5	728.7	4.4	38.99	19.67	71.3	
02022 Hot Beverages	9.4	2.6	357.3	4.4	37.71	17.07	79.4	
02023 Cereals & Morning Snac...	8.8	2.5	353.2	4.2	38.15	16.76	81.9	
13008 Fresh Veg	16.0	6.2	256.9	4.2	36.06	15.79	82.2	
14001 Butter & Spreads	8.9	2.5	348.6	4.2	40.53	18.22	80.0	

### AFFINITY SCORE CALCULATION

Given subject product S and comparison product C:

$$\frac{((\# \text{ of Baskets with } S \ \& \ C * \# \text{ of Baskets with no } S \ \text{ and no } C) - (\# \text{ of Baskets with no } S \ \& \ C * \# \text{ of Baskets with } S \ \& \ \text{no } C))}{\text{SQRT}(\# \text{ of Baskets with } S * \# \text{ of Baskets with no } S * \# \text{ of Baskets with } C * \# \text{ of Baskets with no } C)} * 100$$

### FACT ILLUSTRATION

	# Of Baskets
<b>Laundry &amp; Paper Products (S&amp;C)</b>	1,672,388
<b>No Laundry or Paper Products (No S&amp;C)</b>	681,970,383
<b>Laundry, No Paper Products (S no C)</b>	9,240,287
<b>Paper Products, No Laundry (C no S)</b>	24,319,267
<b>Laundry (S)</b>	10,858,131
<b>Paper Products (C)</b>	25,937,111
<b>No Laundry (No S)</b>	679,843,097
<b>No Paper Products (No C)</b>	669,276,121

$$\text{AFFINITY SCORE} = \frac{((1,672,388 * 681,970,383) - (9,240,287 * 24,319,267))}{\text{SQRT}(10,858,131 * 25,937,111 * 679,843,097 * 669,276,121)} * 100$$

$$\text{AFFINITY SCORE} = 8.10805$$

# PRODUCT AFFINITY ANALYSIS

## DATA & FACT DEFINITIONS (P2)

Section Code & Desc	1 Subject Product Average Price when...	2 Subject Product Average Price Overall	3 Spend Index	4 Comparison Product Average Price when Subjec...	5 Comparison Product Average Price Overall	6 Spend Index
+ 01001 Pet	3.67	3.68	99.8	3.65	3.15	58.8
+ 01003 Cleaning & Cleaners	3.95	3.68	107.6	2.88	2.44	59.8
+ 01004 Food Wrap & Storage	3.99	3.68	108.7	2.59	2.46	53.3
+ 01005 Paper Products	3.92	3.68	106.5	3.12	2.80	56.5
+ 01006 Oral Hygiene	4.09	3.68	111.2	2.57	2.40	54.4
+ 01007 Deodorants & Body Spray	4.02	3.68	109.3	2.12	2.02	53.3
+ 01008 Haircare	4.09	3.68	111.4	3.45	3.24	54.1
+ 01009 Men		3.68			2.70	

- Subject Product Average Price when Comparison Product purchased:** Average price of the subject product when both products were purchased on the same ticket; In this example laundry detergents and Paper Products; 3.92
- Subject Product Average Price Overall:** Overall average product spend per basket of the subject product (on all tickets); In this example laundry detergent; 3.68
- Spend Index:** Index of Fact 1 vs Fact 2;  $(3.92/3.68)*100=106.5^*$
- Comparison Product Average Price when Subject Product Purchased:** Average price of the comparison product when both products were purchased on the same ticket; In this example Paper Products 3.12\*
- Comparison Product Subject Average Price Overall:** Overall average product spend per basket of the comparison product (on all tickets); In this example Paper Products 2.80\*
- Spend Index:** Ticket Spend Affinity Index, Index of Fact 4 vs Fact 5 compared to the collective Spend Index; in this example  $(3.12/2.80)/197.0*10000=56.58^{**}$

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