

Cross-cluster selling: penetration and harmonisation

What the two words mean, where Binzagr is today, what we recommend, how it is calculated, the assumptions behind it and the data used.

Riyadh van sales 1 Mar – 20 Oct 2026 · App page: Cluster harmonisation · Version 2, 24 Oct 2026 · Binzagr confidential

2.12 of 6

clusters per shop today (35.4% of pairs served)

2.26

base-case target, +7% (we bank half the gap)

2.41

full benchmark: every type of shop at the best quarter of similar shops

SAR 321K

gross profit a year, base (range SAR 192K–SAR 449K)

1 · Two words, one idea

Penetration is the share of possible customers that actually buy something. In this POV it is used at three levels:

- **Cluster penetration (reach):** of 4,535 shops, how many buy from a cluster. Unilever HPC reaches 50% of shops, Malt Beverages 44%, Personal Care only 13%.
- **Cross-cluster penetration:** of all possible shop × cluster combinations (4,535 shops × 6 clusters = 27,210), how many are actually buying. Today it is **35.4%**, which is the same as saying the average shop buys from **2.12 of the 6** clusters.
- **SKU penetration (a model term):** on the Next-best SKU page, "this SKU is bought by 40% of similar shops" is one of the signals the model uses to suggest it.

Harmonisation is the goal of raising that penetration. Binzagr's six clusters work like six separate companies: each has its own vans and principals, and they rarely sell into the same shops. Harmonisation means making the six teams act as one towards the customer, so that every shop is offered as many of the six clusters as it can use. In short: maximising products to all customers.

"Harmonisation" is our word, taken from the app page name. Binzagr has not used it in anything they sent us, so with the client say **"cross-cluster selling"**, the name of the lever.

- **Today:** 44% of shops (2,010) buy from only one cluster, and only 39 buy from all six.
- **Target:** every type of shop (channel and size) in every neighbourhood reaching the level of the best quarter of similar shops across Riyadh. That adds about 1,299 shop × cluster pairs.
- **Value:** about SAR 321K a year in gross profit (the "Cross-cluster selling" lever).
- **How:** the app ranks which shop is likely to take which cluster and hands each lead to the nearest van that already sells that cluster, typically 247 m away. In a time-honest re-test the ranking is only about as good as ranking by channel popularity (section 6), so present the leads as a sales list, not as a strong model.

BE CAREFUL

Not the same as **"Customer code merge"** on the Data trust page, which joins duplicate customer codes into real businesses (18,983 codes → 6,766 businesses). In this brief, harmonisation always means the cross-cluster idea.

2 · Where Binzagr is today

Actual

Shops by the number of clusters they buy from (4,535 shops):

1 CLUSTER	2	3	4	5	ALL 6
2,010	976	831	464	215	39
44%	22%	18%	10%	5%	1%

Reach of each cluster:

CLUSTER	VANS	REACH	SHOPS BUYING
Unilever HPC	29	50.0%	2,268
Malt Beverages	26	43.9%	1,991
Ice Cream	32	40.1%	1,819
Tea & Dairy Foods	15	37.2%	1,687
Snacks & Confectionery	12	27.9%	1,265
Personal Care	5	13.0%	590
Shop × cluster pairs			9,620

4,961 buying customer codes = 4,535 real shops (426 fewer) after merging Personal Care "twin" codes (same shop within 50 m and a matching English or Arabic name). The twin step finds 465 twin codes; a twin whose partner bought nothing in the period leaves the number of buying shops unchanged. Personal Care has 599 buying codes but 590 shops after the merge, so the six rows add up to the 9,620 pairs above. Free-goods lines are excluded.

3 • What we recommend

Simulated

CASE	GAP WON	PAIRS ADDED	CLUSTERS / SHOP	CHANGE	PAIRS SERVED	GROSS PROFIT / YR
Today	—	—	2.12	—	35.4%	—
Low	30%	~390	2.21	+4%	36.8%	SAR 192K
Base	50%	~650	2.26	+7%	37.7%	SAR 321K
High	70%	~910	2.32	+9%	38.7%	SAR 449K
Full benchmark	100%	~1,299	2.41	+14%	40.1%	not claimed

SAY THIS

"Your shops buy from 2.1 of your 6 clusters. If every type of shop matched the best quarter of similar shops in Riyadh, the average would be 2.4. We bank half of that gap, about 2.26: +7%, worth SAR 321K a year in gross profit."

4 • How the target is set

The target is Binzagr's own best performance, not an outside benchmark (the "own-best benchmark"):

1. Split Riyadh into **80 neighbourhoods** with k-means on shop GPS (4,509 shops with Riyadh coordinates).
2. Inside each neighbourhood, group shops by **channel** (inferred from names) and **size quartile** (monthly spend), so a small baqalah is compared only with small baqalahs. Each group is a "cell".
3. For each channel × size, the target is the coverage (clusters per shop) of the **best quarter (P75)** of cells across Riyadh, using only cells with at least 8 shops.
4. For each cell below its target: missing pairs = (target – coverage) × shops in the cell. Cells above target count as zero.
5. Sum over all cells: **1,299 shop × cluster pairs** to add.

$$\begin{aligned} \text{Gap} &= \sum \text{over cells of } \max(0, \text{target} - \text{coverage}) \times \text{shops} &&= 1,299.42 \text{ pairs} \\ \text{Clusters per shop if all were added} &= (9,620 + 1,299) \div 4,535 &&= 2.41 \end{aligned}$$

For context, neighbourhood averages run from 1.89 (worst quarter) through 2.13 (Riyadh) to 2.28 (best quarter). The Riyadh figure here is 2.13 because it covers the 4,509 shops with Riyadh GPS; across all 4,535 shops it is 2.12. The full benchmark (2.41) is above the best-quarter neighbourhood average (2.28) because each type of shop is held to its own best quarter, and shops already above their target are not counted down.

5 • How the value is calculated

Pairs to add (own-best gap)	1,299.42
× 50% won (base capture)	= 649.7 pairs
× SAR 257 a month per new pair	= SAR 166,975 a month
× 12 months	= SAR 2,003,706 sales a year
× 16% gross margin	= SAR 320,593 gross profit a year

The extra sales (SAR 2.0M) are about 3% on top of yearly Riyadh van revenue (SAR 63.0M). Low and high change only the capture rate (30% and 70%). The value does not depend on the adoption model; it comes from the benchmark gap.

6 • How it is delivered

- **Adoption model.** The app runs LightGBM. It predicts which shop starts buying which new cluster.
- **Proof (time-honest re-test, model review of 23 Oct).** Trained on adoptions up to 31 July and tested on adoptions between 1 Aug and 20 Oct by shops held out completely: 3,885 unseen shop × cluster pairs, 220 real adoptions (5.7%), five clusters (Personal Care sells under its own codes and is left out).

RANKING	AUC, ALL CLUSTERS	AUC WITHIN A CLUSTER (MEAN)	ADOPTIONS IN ITS TOP 10%
Recommended blend (logistic regression + XGBoost)	0.79	0.75	32%
App's model type (LightGBM), re-run the same way	0.78	0.71	25%
Channel popularity	0.73	0.65	30%
"Neighbours buy it"	0.46	0.45	9%
Random	0.50	0.50	10%

The 0.90 shown in the app is pooled across clusters and mostly reflects that Unilever HPC is adopted far more often than the other teams; re-check it before the demo. With the recommended blend, the top 10% of leads hold 3.2× the adoptions of a random 10%, only slightly ahead of channel popularity.

- **Leads (from the current app model; the counts will change when the model is updated):** 823 high-chance leads across 741 shops (expected SAR 380K of sales a year), plus 1,146 medium.
- **Hand-off:** each lead goes to the nearest van already selling that cluster. The median distance for high leads is **247 m**, and 57% are within 300 m.

7 • Assumptions

ASSUMPTION	VALUE (LOW · BASE · HIGH)	SOURCE	LABEL
Share of the gap won (capture)	30% · 50% · 70%	Our assumption; no benchmark. A pilot would measure it.	Simulated
Spend of a newly adopted pair	SAR 257 a month	Mean of the 242 real adoptions, Aug–Oct 2026. Very uneven: see section 9.	Actual
Gross margin	16% in all cases	Data-team benchmark C07 (Almunajem FY2025)	Simulated
Target level	P75 of cell coverage	Method choice: Binzagr's own best quarter	—
Cells used to set targets	at least 8 shops	Method choice, to avoid noise from tiny groups	—
Months a year	× 12, no seasonality	Simplification	—
Channel of a shop	from name keywords	No official channel codes in the master (gap G9)	Inferred

8 • Data used

- **Riyadh van sales lines**, 1 Mar – 20 Oct 2026: 325,544 lines, SAR 40.4M, 119 vans; free-goods lines excluded. Source of who buys which cluster, and of the SAR 257 spend.
- **Customer master** (18,983 codes): GPS for neighbourhoods and hand-off distances, English and Arabic names for twin matching and channel, customer type and hierarchy codes.

- **Product master** (23,645 products): principal → cluster mapping. Almost every principal is sold by one cluster; the exception is Binzagr Foods (96% Tea & Dairy Foods).
- **Version 3 cleaned package** from Binzagr's data team (49 checks: 47 pass, 2 warnings), including the 16% margin parameter.
- **Model review** of 23 Oct (06_Model_Review, adoption_models.csv): the time-honest re-test in section 6.
- **Scripts:** cluster_map.py (cluster mapping), twins.py (twin codes), clusters.py (coverage, model, benchmark, hand-off), savings_model_v3.py (value). Full formulas are in the calculation pack, §3.3 and §4.6.

9 • Caveats and what would firm it up

- **Three targets appear in the app.** 2.28 on action card 6 is the best-quarter neighbourhood average. 2.34 on the Cluster harmonisation page is a weighted figure that also pulls above-target areas down. 2.41 is what the 1,299 pairs actually give. Quote **2.41 as the benchmark and 2.26 as the base case**, and never call 2.41 "your best neighbourhoods".
- **Small cells.** About 35% of the gap (449 pairs) comes from cells with fewer than 8 shops, where coverage is noisy. Without them the base would be about SAR 210K.
- **Margin.** It is fixed at 16%. At 12–20% the base would be SAR 240K–401K. Margin by SKU or principal would replace it.
- **New-pair spend.** SAR 257 a month is the average of 242 shops' first weeks after adopting. Spend is very uneven: in our check across all shops that adopted a cluster in Aug–Oct, the top 10% of new pairs carry about 77% of the spend and the typical (median) new pair spends about SAR 35 a month. An average is the right basis for a total, but it rests on a few large shops, so treat SAR 257 as uncertain; steady-state spend may also be higher or lower.
- **Model.** The app's current model ranks leads no better than channel popularity at the top 10% (25% vs 30%). The recommended blend is slightly better (32%). The SAR 321K does not depend on either.
- **Van capacity.** New pairs need van visits, which use part of the van-days freed by the fleet lever (up to about 20%). This is not netted.
- **Lead value vs lever value.** The 823 high leads alone are worth about SAR 61K of gross profit (current app model). The SAR 321K is the wider benchmark gap.

What would make it Actual: margin by SKU or principal; a hand-off pilot in a few neighbourhoods with control neighbourhoods (Unilever HPC sweep and Malt hand-offs are the natural start); official channel codes and Binzagr's own cluster list; and other cities' customer masters to extend the benchmark.

Changes from version 1

- Model figures replaced with the time-honest re-test of 23 Oct (AUC 0.90 → 0.79 for the recommended blend, 0.78 for the app's current model; top 10% 65% → 32%; channel popularity 0.71 → 0.73 and 40% → 30%; lift 6.5× → 3.2×), and the leads labelled as coming from the current app model.
- "Say this" box, the 2.41 card and the target line reworded: 2.41 is every type of shop at its own best quarter, not "your best neighbourhoods" (those average 2.28).
- Personal Care reach corrected to 590 shops (13.0%) after the twin merge, so the reach table adds up to the 9,620 pairs; twin-merge note explains 4,961 → 4,535.
- Checks: 47 of 49 pass (2 warnings), not 47 of 47.
- Principal mapping: "almost every principal" (Binzagr Foods is 96% / 4%).
- 2.12 vs 2.13 explained (all shops vs shops with Riyadh GPS).
- Title changed to "Cross-cluster selling"; noted that "harmonisation" is our word, not Binzagr's.
- New-pair spend caveat added (uneven spend; median about SAR 35 a month).

Binzagr confidential. Coverage, benchmark and value numbers are computed from clusters_summary.json by the build script; model figures come from the 23 Oct model review (06_Model_Review). Full method in Binzagr_POV_Calculations_and_Value.pdf.