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**name: Opportunity Score Improvements** **overview: Improve opportunity scoring to align with recognized sales/CRM practices (composite scoring, value weighting, consistent semantics) and add clear documentation so you can explain the changes to your team.**  
**todos: []** **isProject: false**

# Opportunity Score Improvements and Team Explanation

## Current state (recap)

- **Four different formulas** in the app; no single definition.
  - **Mixed semantics:** analytics uses "higher = more opportunity"; outreach/brand use "lower = more opportunity."
  - **No revenue or recency** in any score, despite data being available.
  - **Brand matching bug:** non-buyers get +10 (higher score) but list is sorted ascending, so existing buyers rank first instead of conquest opportunities.
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## Recognized practices to align with

Practice	What it is	How we can use it
<b>Lead/Opportunity scoring</b>	Single composite (often 0–100) from fit + value + behavior.	Combine category gap, revenue tier, and (optional) recency into one score.
<b>Value weighting</b>	Prioritize high-revenue or high-potential accounts.	Use revenue (and optionally deal size) so big accounts rank higher when opportunity is equal.
<b>RFM (Recency, Frequency, Monetary)</b>	Segment by last purchase, order count, spend.	Use recency (e.g. days since last order) so active customers rank higher for expansion.
<b>White space / wallet share</b>	"Share of customer wallet we don't have yet."	Keep category-gap idea but normalize and optionally weight by revenue.

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## Suggested improvements by feature

### 1. Analytics: Business-category opportunity (keep concept, add clarity and optional revenue weight)

**Current:** `opportunity_score = (total_categories - categories_bought) /`

`total_categories` (0–1, higher = more opportunity).

## Suggested:

- **Keep** this as the core “category gap” (white space) metric.
- **Rename in UI** to “**Category expansion opportunity**” or “**Unrealized category share**” and add a short tooltip: “*Share of product categories this business type does not yet buy; higher = more room to expand.*”
- **Optional enhancement:** Add a **revenue-weighted** variant so business categories that already generate more revenue get a higher “priority” score (e.g.  $\text{gap} \times \log(1 + \text{total\_revenue\_for\_segment})$ ), and expose it as a separate column or toggle. Document that this follows “white space  $\times$  value” thinking.

**Files:** [src/analytics.py](#) (`identify_opportunities`), [app.py](#) (chart title and axis label).

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## 2. Customer-level opportunity (outreach, location, brand\_product\_matcher): composite score 0–100

**Current:** `opportunity_score` = number of product categories bought (lower = more opportunity). Revenue is available but not in the score.

### Suggested formula (recognized practice: composite lead/opportunity score):

- **Category gap (expansion potential):**

```
category_gap = (total_product_categories - categories_bought) / total_product_categories
```

(0–1; higher = more categories they don’t buy yet).

- **Revenue tier (value):**

Normalize revenue per customer (e.g. min-max or percentile) into a 0–1 **revenue\_score** so larger accounts score higher.

- **Optional recency (engagement):**

If `transaction_date` is available: `recency_score = 1 - (days_since_last_order / max_days)` so more recent buyers score higher.

- **Composite:**

```
opportunity_score = w1 * category_gap + w2 * revenue_score + w3 * recency_score
```

with default weights e.g.  $w1=0.5$ ,  $w2=0.4$ ,  $w3=0.1$  (or  $w3=0$  if no dates). Scale to **0–100** and **round** for display.

- **Semantics: Higher = more opportunity** (prioritize top of list). Sort **descending** by `opportunity_score`.

This gives a single, explainable number that combines “room to grow” (gap), “value” (revenue), and optionally “engagement” (recency).

**Files:** [src/outreach\\_automation.py](#) (`find_target_businesses_for_outreach`), [src/location\\_analytics.py](#) (`find_similar_businesses_by_location`), [src/brand\\_product\\_matcher.py](#) (consumes outreach score; switch to descending sort if/when outreach returns new score).

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## 3. Brand matching: fix logic and use same composite idea

## Current:

opportunity\_score = len(customer\_categories) if buys brand category, else len(customer\_categories) + 10. Sorted ascending, so **existing buyers** rank first (opposite of "opportunity = don't buy yet").

## Suggested:

- **Conquest vs upsell:**

- **Conquest score:** Prioritize customers who **do not** buy the brand's category (opportunity to win new category).
- **Upsell score:** Prioritize customers who **do** buy the brand's category (opportunity to sell more / switch to brand).

- **Single “opportunity” list:**

Use the **same 0–100 composite** as in (2) (category\_gap + revenue + optional recency), but:

- **Conquest:** Filter to “does not buy brand category” and sort by composite **descending**.
- **Upsell:** Filter to “buys brand category” and sort by composite **descending**.
- **Remove** the ad hoc <sup>+10</sup> and the “lower = more opportunity” convention here so behavior matches outreach and is easy to explain.

**Files:** [src/brand\\_matching.py](#) (find\_businesses\_for\_brand). Optionally add a parameter priority="conquest" | "upsell" and sort/filter accordingly.

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## 4. Consistent semantics and UI

- **Standard: Higher score = more opportunity** everywhere. Use 0–100 for customer-level scores so “85” is clearly “high opportunity.”
- **UI:**
  - Use the same label everywhere for customer-level score, e.g. **“Opportunity score (0–100)”** with tooltip: *Combines category expansion potential, account value, and recent activity; higher = higher priority.*
  - For analytics, use **“Category expansion opportunity”** (or “Unrealized category share”) and keep 0–1 or show as %.
- **Sorting:**
  - Analytics: keep **descending** (higher first).
  - Outreach, location, brand: **descending** by opportunity score (top of list = best opportunities).
- **Avg Opportunity Score metric:** Once on 0–100, the “Avg Opportunity Score” in the app is interpretable (e.g. “average 62” means “moderate opportunity set”).

**Files:** [app.py](#) (labels, tooltips, any sort order that still assumes “lower = better”), [src/outreach\\_automation.py](#), [src/location\\_analytics.py](#), [src/brand\\_matching.py](#), [src/brand\\_product\\_matcher.py](#).

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## How to explain the desired changes to your team

### One-line pitch

- **Before:** “Opportunity score means different things in different places; sometimes low is good, sometimes high is good, and we don’t use revenue or recency.”
- **After:** “One clear definition for customer lists: a 0–100 score where higher always means ‘better’

opportunity,' combining how much room they have to buy more categories, how valuable they are, and how recently they bought."

## Short "why" for stakeholders

1. **Industry alignment:** Sales and marketing usually use composite scores (fit + value + behavior) and "higher = better"; we're aligning with that so the number is intuitive and defensible.
2. **Revenue in the score:** Right now we could send outreach to tiny accounts first. Adding revenue ensures we prioritize valuable accounts when opportunity is similar.
3. **Consistent meaning:** Same scale (0–100) and same "higher = more opportunity" everywhere, so product, sales, and support all mean the same thing when they say "high opportunity."
4. **Brand fix:** Today, "opportunity" in brand matching actually ranks current buyers first; we'll fix that so conquest (don't buy yet) and upsell (buy already) are explicit and correct.

## Optional one-pager for the team (you can paste into Confluence/Notion/README)

**Title:** Opportunity score – definition and how we use it

- **Business category view (analytics):**

"Category expansion opportunity" = share of product categories that business type doesn't buy yet (0–100% or 0–1). **Higher = more room to expand** into new categories for that segment.

- **Customer/outreach view (target lists, brand matching, location):**

"Opportunity score (0–100)" = composite of:

- **Expansion potential** (how many categories they don't buy yet),
- **Account value** (revenue size),
- **Recent activity** (optional; how recently they bought).

**Higher = higher priority** for outreach. We sort lists so the best opportunities are at the top.

- **Brand conquest vs upsell:**

We separate "don't buy this category yet" (conquest) from "already buy this category" (upsell). Both use the same 0–100 score so we prioritize the best accounts in each list.

## If someone asks "is this an industry standard?"

- "There isn't one universal formula, but the **ideas** are standard: composite scoring (fit + value + behavior), revenue weighting, and white-space or category-gap. We're implementing those in a simple, transparent way we can explain and tune (e.g. weights)."

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## Implementation order (for when you leave Plan mode)

1. **Define shared scoring helper** (e.g. in `src/Analytics.py` or new `src/opportunity_scoring.py`):  
input = per-customer dataframe with columns for categories bought, total categories, revenue, optional `last_order_date`; output = 0–100 score and optional components (`category_gap`, `revenue_score`, `recency_score`). Use min-max or percentile normalization for revenue; handle missing `transaction_date` by setting recency weight to 0.
2. **Outreach:** In `find_target_businesses_for_outreach`, compute total revenue and (if available) days since last order per customer; call shared helper; replace current `opportunity_score` with 0–100; sort descending.
3. **Location:** Same in `find_similar_businesses_by_location`; sort descending.
4. **Brand matching:** Remove +10 logic; use shared helper; add conquest vs upsell filter and sort descending

for the chosen mode.

5. **Brand product matcher:** Use new score from outreach; sort descending.
  6. **Analytics:** Keep formula; rename in UI to "Category expansion opportunity" and add tooltip; optionally add revenue-weighted column.
  7. **App UI:** Update all labels and tooltips to "Opportunity score (0–100)" or "Category expansion opportunity," fix any "lower = better" copy, and ensure tables/charts sort descending where appropriate.
  8. **Documentation:** Add the one-pager (or link to it) in the repo (e.g. `docs/OPPORTUNITY_SCORE.md` or a section in existing guide) so the team has a single reference.
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## Summary

- **Analytics:** Keep category-gap formula; rename and add tooltip; optionally add revenue-weighted variant.
- **Customer-level:** Introduce a single **0–100 composite** (category gap + revenue + optional recency); **higher = more opportunity**; use in outreach, location, and brand matching; fix brand conquest/upsell logic.
- **Team explanation:** Use the one-line pitch, the "why" bullets, and the one-pager so everyone understands what the score means and why the changes make it more meaningful and aligned with common practice.