



UNEARTHING THE UNEXPECTED:

The power of machine learning

FEBRUARY 2020



IT'S HARDER THAN EVER TO FIND TRULY NEW INSIGHTS



**Research budgets
are smaller**



**Need to dig deep to
find new insights**



**Traditional research
can be expensive and
time consuming**



THE GOOD NEWS

You can find game-changing insights without
collecting primary research data



YOU MAY BE SITTING ON A GOLD MINE OF CUSTOMER INSIGHT



3 BILLION +
ACTIVE SOCIAL
MEDIA USERS



2 HOURS +
SPENT ON
SOCIAL MEDIA
PER DAY (ON
AVERAGE)



100,000+
ONLINE FORUMS



60 MILLION +
HAVE POSTED
REVIEWS ONLINE
ABOUT PRODUCTS
AND SERVICES



265 BILLION
CUSTOMER
SERVICE CALLS
EVERY YEAR



11
CUSTOMER
SERVICE
INTERACTIONS
PER YEAR



CHALLENGE

HOW DO WE
MAKE SENSE OF
IT ALL?



FASTER, BETTER INSIGHTS WITH AI

MACHINE LEARNING MAKES IT POSSIBLE TO MORE QUICKLY FIND THE INSIGHTS THAT MATTER



FASTER

Processing
power



BETTER

Overcomes
human bias



CHEAPER

UGC is virtually
free



COMPLETE

Comments
from
thousands



EASIER

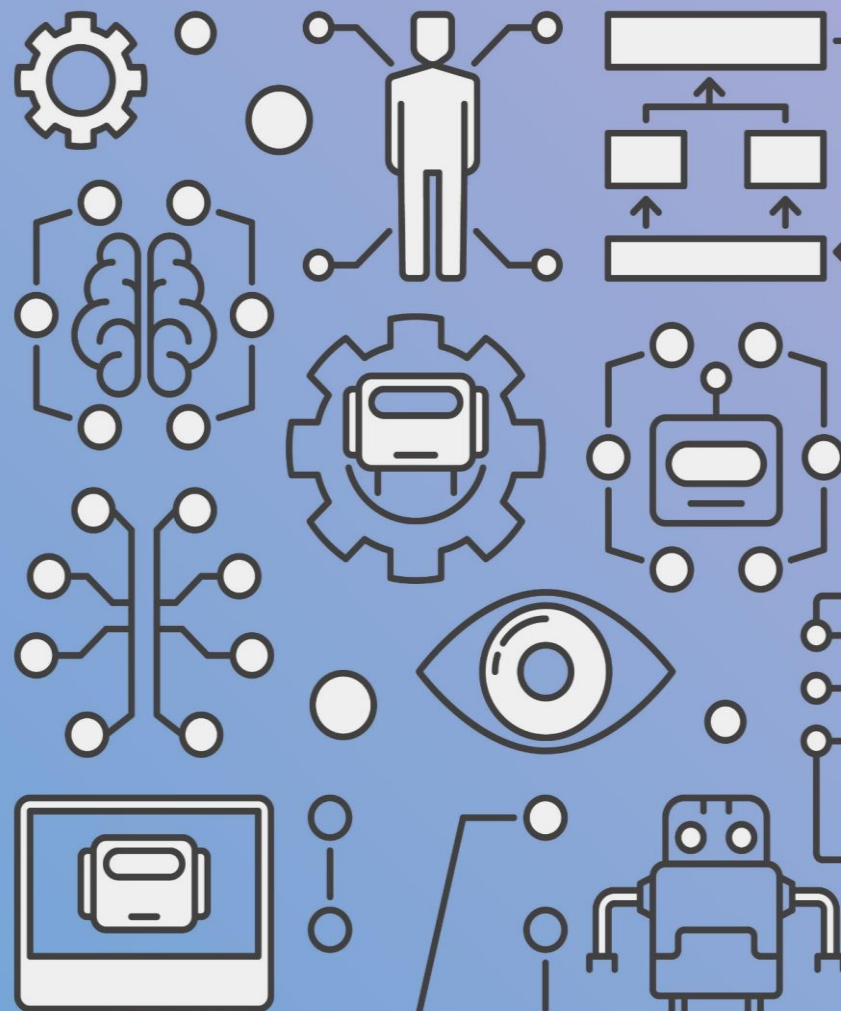
Machine does
the heavy
lifting



RELEVANT

Insights at the
moment of
truth





SOPHISTICATED ALGORITHM
TO REDUCE A MASSIVE
DATABASE THROUGH THE
USE OF A CONVOLUTIONAL
NEURAL NETWORK

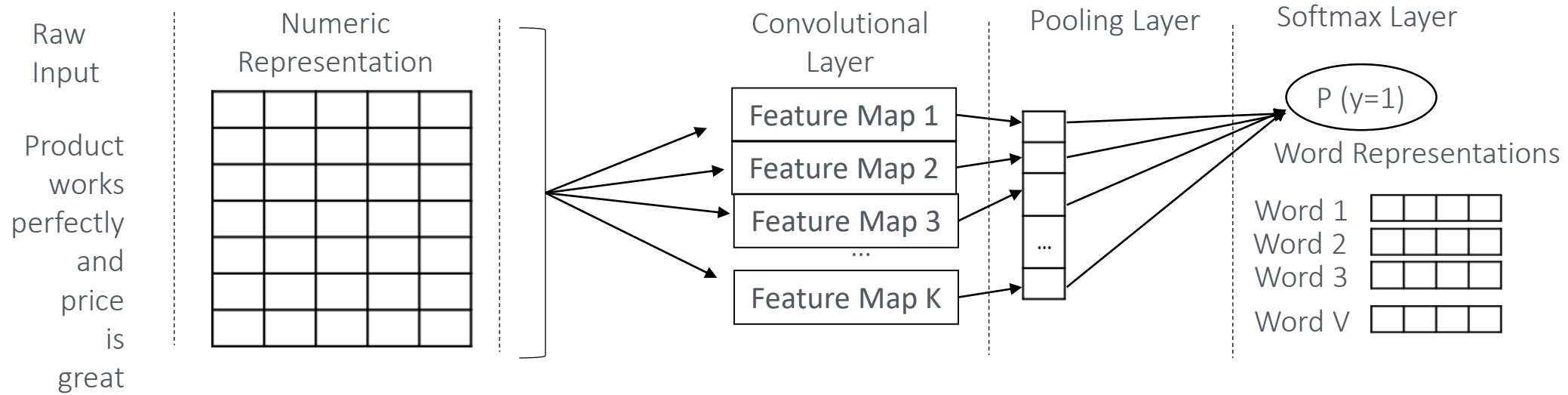
WE'VE PARTNERED WITH RESEARCHERS AT MIT TO BUILD ON THE LATEST DEVELOPMENTS IN MARKETING SCIENCE

1. Insights **comparable in number and quality** to traditional methods
2. Compared to analyzing a random sample of UGC, **machine learning yields better insights**
3. Can **identify important, infrequently mentioned** insights, less likely to surface with traditional methods

"IDENTIFYING CUSTOMER NEEDS FROM USER-GENERATED CONTENT"

*SSRN 2917 Artem Timoshenko & John Hauser, *Journal of Marketing Science*, January 2019

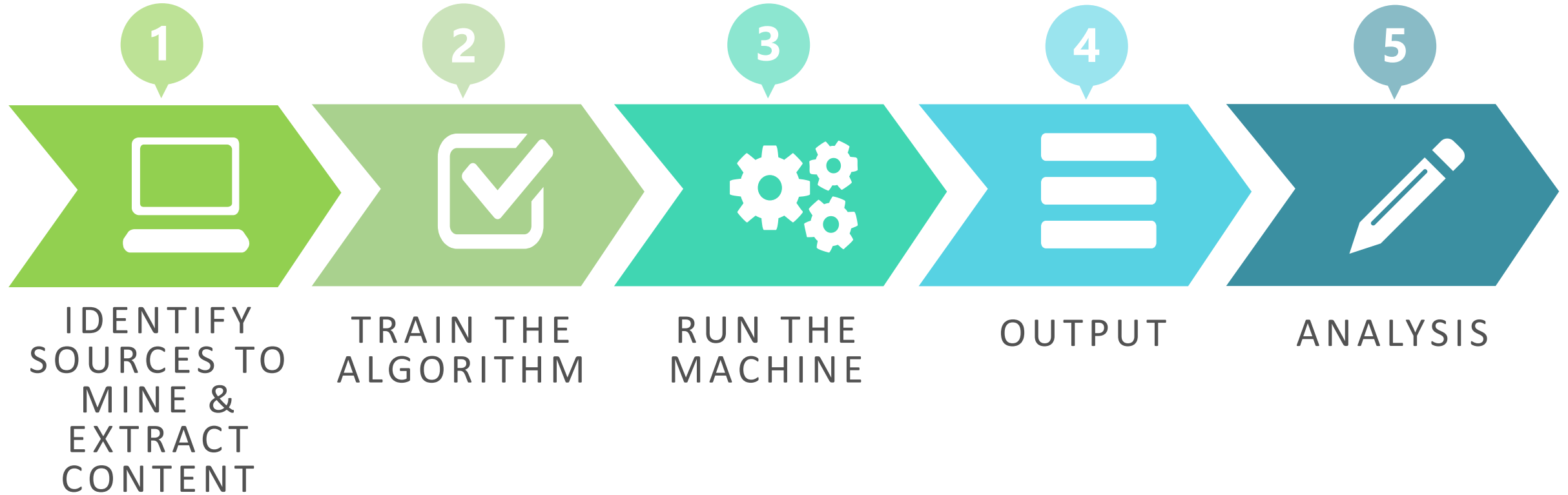
HOW IT WORKS



- Harvest readily available user-generated content
- Identify informative sentences with a convolutional neural network (see figure)
- Train "word embeddings" for semantic meaning
- Select clusters of sentences that represent different customer needs



MACHINE LEARNING ROADMAP



DOZENS OF SUCCESSFUL CLIENT APPLICATIONS SINCE 2017

**UNCOVERING THE UNIVERSE OF NEEDS
FOR INNOVATION**

IDENTIFYING ADJACENCIES

**DISCOVERING INSIGHTS ABOUT
COMPETITORS**

TRACKING MARKET TRENDS

DEVELOPING EFFECTIVE CLAIMS



WHAT YOU NEED TO MAKE MACHINE LEARNING WORK FOR YOU

2K

HIGH QUANTITY

2,000+ sentences

SUBSTANTIVE SUBMISSIONS

At least 7 words per entry



TEXT-BASED DATA

Not in pictures, charts, or other graphics

RICH, INFORMATIVE CONTENT

Attributes, needs, problems, opinions and solutions



APPLICABLE ACROSS VARIOUS TEXTUAL DATA SOURCES


USER GENERATED CONTENT

- PRODUCT REVIEWS
- ONLINE DISCUSSION FORUMS
- ONLINE COMMUNITIES
- BLOGS

PROPRIETARY DATA

- CALL CENTER TRANSCRIPTS OR NOTES
- ONLINE CHAT DATA
- OPEN-ENDED SURVEY DATA





SENTIMENT ANALYSIS & FREQUENCY OF MENTION ADDS POWER

SENTIMENT ANALYSIS

MAP AND COMPARE
PERFORMANCE ACROSS
BRANDS, PRODUCT SKUS OR
CUSTOMER SEGMENTS

FREQUENCY OF MENTION

TOP OF MIND, MOMENT OF
TRUTH INSIGHTS

OFTEN USED A PROXY FOR
IMPORTANCE

CASE STUDY: MACHINE LEARNING FOR CONSUMER PRODUCTS

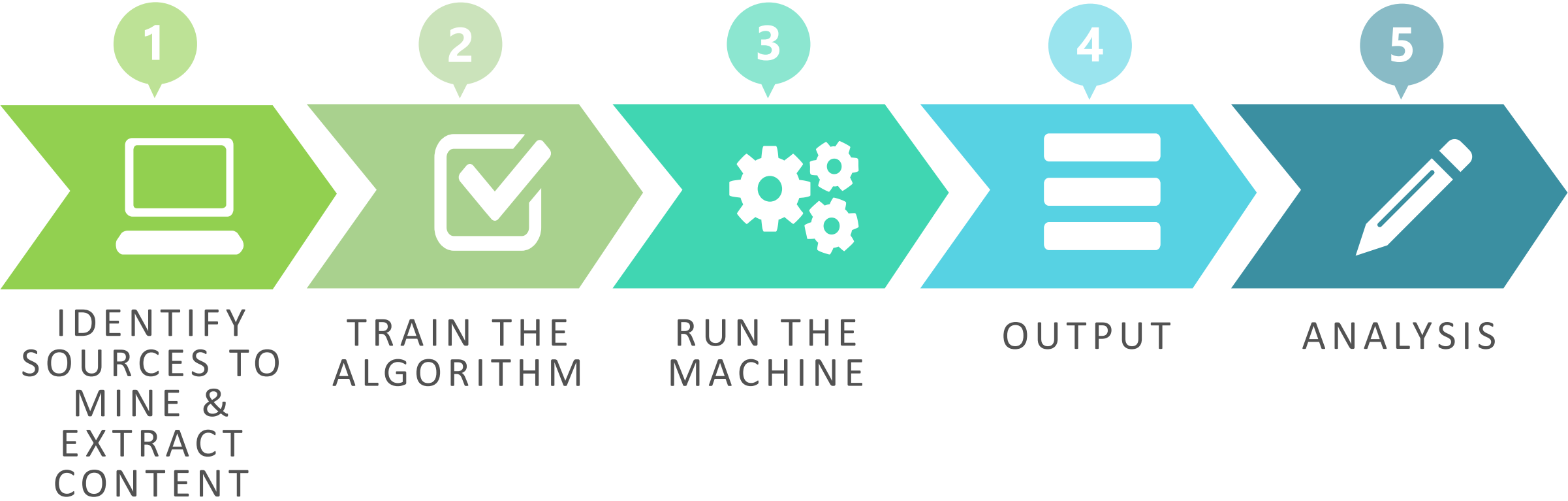


OBJECTIVE:

Identify customer needs and insights related to blenders to inform product development and marketing



OUR PROCESS



18,000
SENTENCES

➔

97
UNIQUE INSIGHTS



WE IDENTIFIED INSIGHTS AROUND 34 TOPIC AREAS



THREE OF THE 97 INSIGHTS IDENTIFIED

TOPIC BLADES

INFORMATIVE CONTENT

“As I examined the blades I found out that the edge on some of them was going”

INSIGHT

BLADES SHOULD STAY SHARP OVER TIME

TOPIC CLEANLINESS

INFORMATIVE CONTENT

“Always have to rinse thoroughly after using even if I’m in a hurry, otherwise it’s impossible to clean as stuff sticks under the blades and in gasket area”

INSIGHT

EASY TO CLEAN EVEN IF I DON’T CLEAN IT IMMEDIATELY

TOPIC BLENDING QUALITY

INFORMATIVE CONTENT

“This unit has no problem with the fruit or the almonds, but will struggle with the flax seeds”

INSIGHT

ABLE TO BLEND ANYTHING I PUT IN IT REGARDLESS OF THE TEXTURE (E.G., FRUIT, NUTS, SEEDS, ETC.)

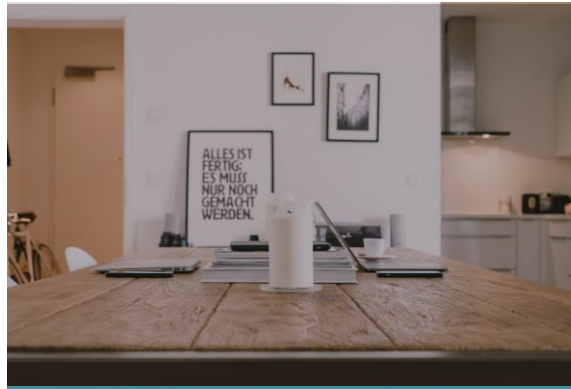


IDENTIFY OVERLOOKED INSIGHTS

A REAL BENEFIT OF MACHINE LEARNING IS THE ABILITY TO
IDENTIFY INSIGHTS OVERLOOKED BY A RANDOM SAMPLING OF UGC



Assured I never have to
worry about the
tightness of the blade
on my blender



Assured my blender
won't ruin the surface
it's sitting on (e.g.,
won't ruin my table)



My blender stays put
when I'm using it (i.e.,
does not wobble or
"walk across the
counter")

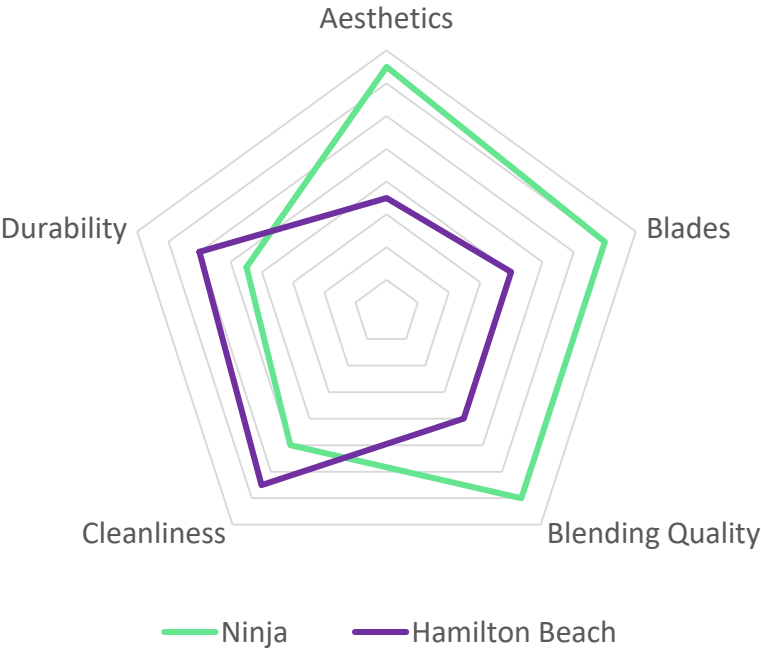


Easy to turn the blender
on or off (i.e., the
on/off switch doesn't
get stuck or become
hard to push)



OVERLAY SENTIMENT FOR DEEPER INSIGHTS

Sentiment on key product
attributes



OUR ALGORITHM HELPS UNCOVER AREAS
WHERE INNOVATIONS WILL HAVE THE
BIGGEST IMPACT



CASE STUDY: MACHINE LEARNING FOR B2B

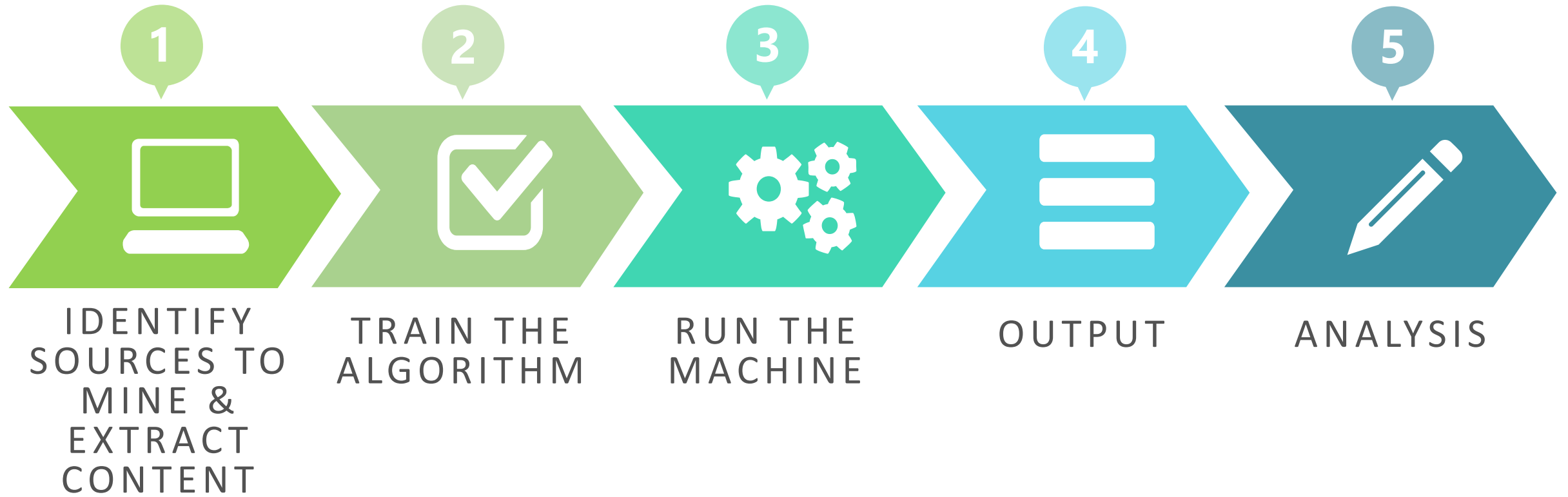
A black and white photograph of a snowplow truck clearing a snowy road. The truck is a heavy-duty pickup truck with a large red snowplow blade attached to the front. The truck's headlights are on, and it is driving through a deep layer of snow. The background shows a snowy landscape with trees and a building.

OBJECTIVE:

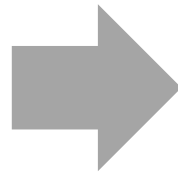
Identify customer needs and insights related to snowplows/spreaders to inform product development and marketing



OUR PROCESS



21,000
SENTENCES



117
UNIQUE INSIGHTS



THREE OF THE 117 INSIGHTS IDENTIFIED

TOPIC

LIGHTS

INFORMATIVE CONTENT

“The reason I don’t angle it is because I hate having the one side sticking out so far and it will block the headlight at some angles.”

INSIGHT

**ABLE TO MAINTAIN
FULL VISIBILITY AT ALL
TIMES, EVEN WHILE
MY PLOW IS ANGLED
(I.E., IT WILL NOT
BLOCK THE
HEADLIGHTS)**

TOPIC

SIDEWALKS

INFORMATIVE CONTENT

“The S70 is not the easiest to turn from one 48 inch walk to another 48 inch walk that is perpendicular.”

INSIGHT

**A SIDEWALK PLOW
THAT IS EASY TO TURN
(I.E., FROM ONE
PERPENDICULAR
SIDEWALK TO
ANOTHER)**

TOPIC

SPREADER

INFORMATIVE CONTENT

“The top box keeps my tools safe and dry - do they still have plastic wheels? Good spreader but wheels keep cracking.”

INSIGHT

**ASSURED THE WHEELS
ON MY SPREADER ARE
DURABLE (I.E., WILL
NOT CRACK)**



GAME CHANGING INSIGHTS NEW TO INDUSTRY EXPERTS



Able to maintain full visibility at all times, even while my plow is angled (i.e., it will not block the headlights)



A sidewalk plow that is easy to turn (i.e., from one perpendicular sidewalk to another)



Assured I have de-icing material for all different types of road (i.e., gravel, paving, etc.)



Sand that will not strip away paint when applied (e.g., parking lines, etc.)

Algorithm identifies insights that are infrequently mentioned, but important



WHAT OUR CLIENT SAID



MIX OF KNOWN/ NEW RESULTS

- We got a mix of known and new result for product characteristics
- Known results increased confidence in validity of the process
- Unknown results increased confidence in the value of the process



COST & TIME EFFECTIVE

- Very cost and time effective
- Rapid results
- Cost reasonable relative to other research processes



RESULTS WERE OBJECTIVE

- Results were objective
- Found that the machine was as advertised – results not agenda driven



CASE STUDY: MACHINE LEARNING FOR MEDICAL

OBJECTIVE:

Identify customer needs and insights related to glucose monitors to inform product development and marketing



ABUNDANT UGC FOR GLUCOSE MONITORS



**FORUMS AND
BLOG POSTS**

1,000+ POSTS



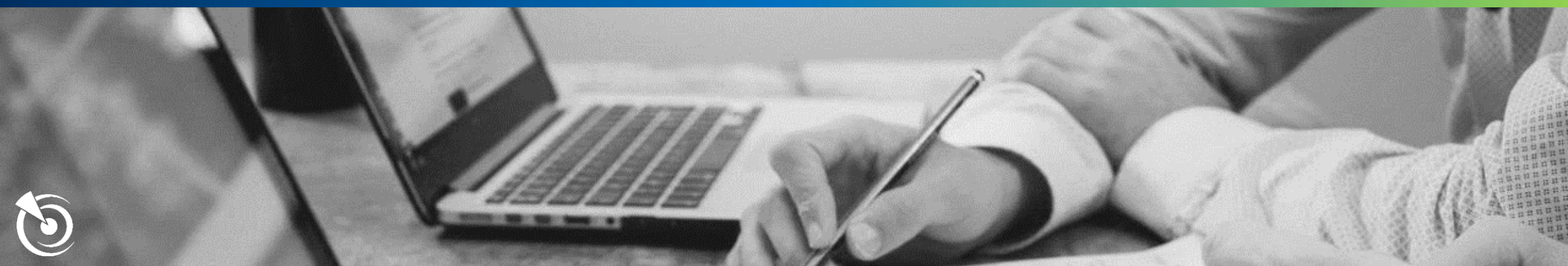
**ECOMMERCE
SITES**

5,000+ REVIEWS



**SOCIAL
MEDIA SITES**

500+ REVIEWS
AND POSTS



EXAMPLES OF NEEDS & ARTICULATIONS UNCOVERED

EXAMPLE FINDINGS

UGC

*"Now here is something no one has mentioned---Be sure to close your strip lid every time u open the container to test----do NOT leave it open! Accu-Chek Aviva Plus strips will **absorb humidity if the lid is not closed & you will lose most or all of them to error messages.***

NEED

External conditions do not affect the accuracy of my glucose monitor reading (i.e., humidity)

ACCURACY

UGC

*"The only way to compile a report is to email it to yourself. You **can't print it directly from the app.** Now that the phrase "**online privacy**" is basically an **oxymoron**, I'm **not thrilled about my test results being stored remotely** or being required to email my results rather than printing locally."*

NEED

Assured my stored readings will be private and secure (i.e., not transmitted)

CONNECTIVITY

UGC

*"Both work in the same way and are easy to use. The GE100 has a bit of an advantage if the tester has **lost some dexterity with the fingers.** Its lancets and test strips are **a little larger and easier to handle** than the test strips and lancets of the Ultra2."*

NEED

Glucose monitor and accessories are easy to use, even for those with limited dexterity

INTERFACE AND FEATURES

OUR ALGORITHM IDENTIFIES UNIQUE INSIGHTS IN THE CUSTOMERS' WORDS AT THE MOMENT OF TRUTH

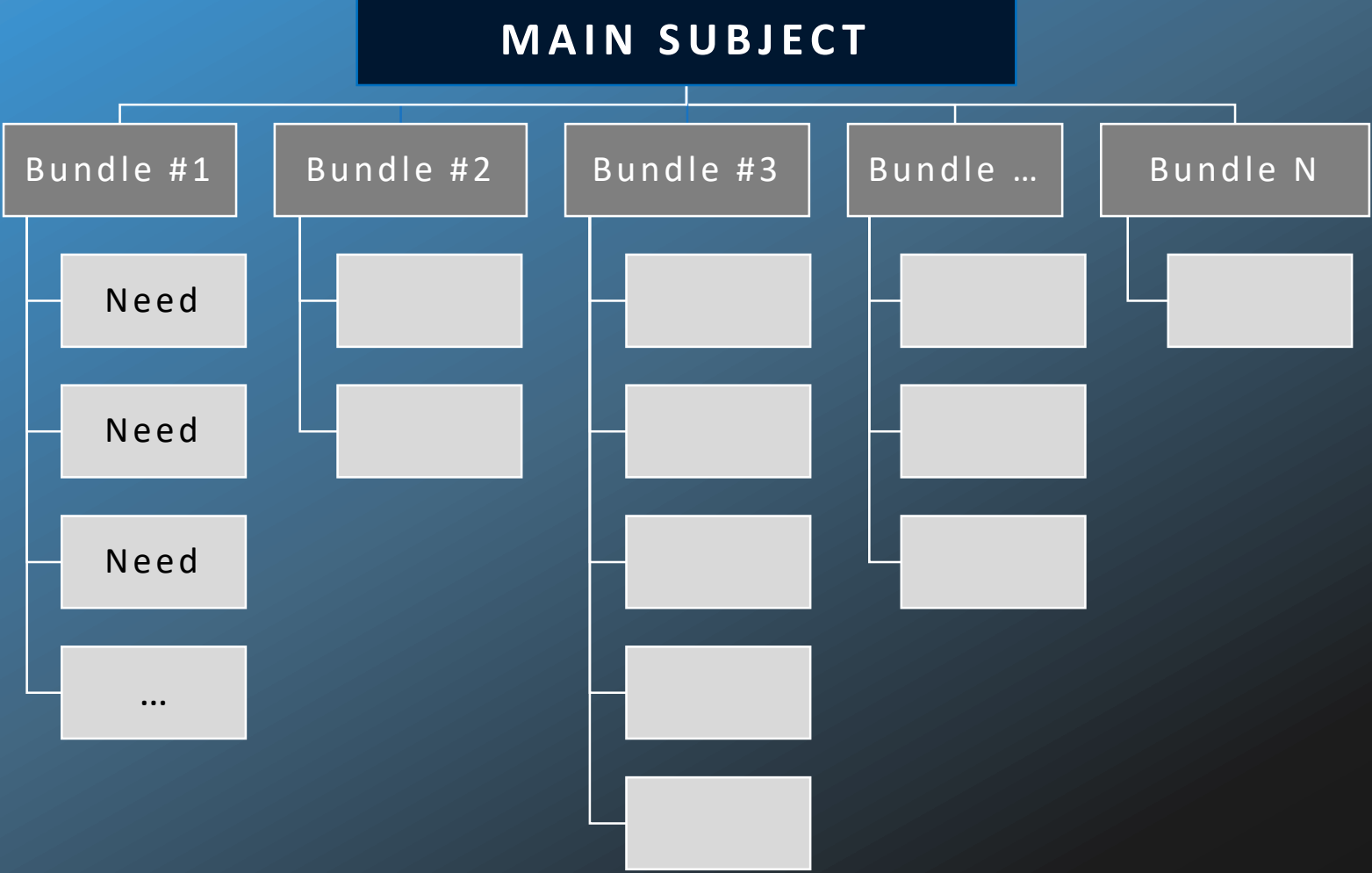




PRIORITIZING THE NEEDS



AFFINITY DIAGRAM



STRUCTURING THE NEEDS HIERARCHY

Voice of the Customer wants and needs are organized into a hierarchy with three levels

STRATEGIC / PRIMARY

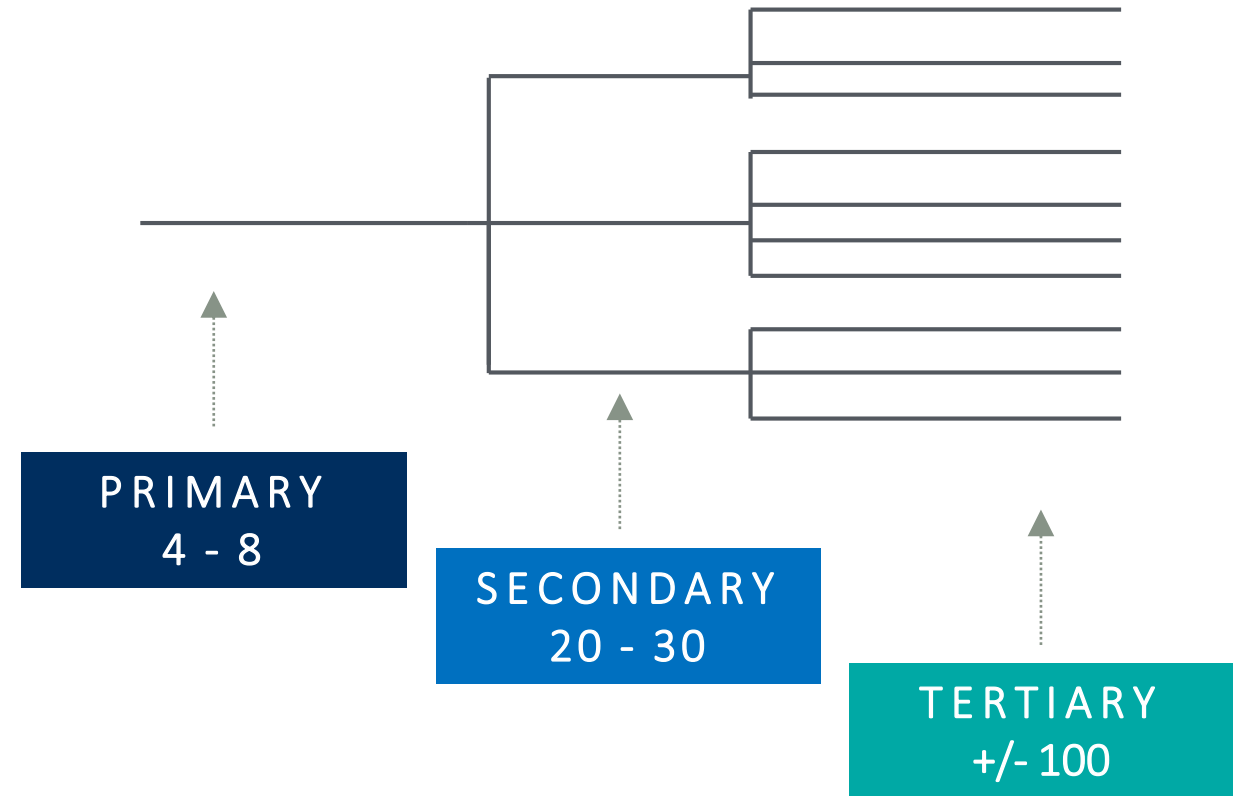
Overarching set of customer needs used to define strategic initiatives and for communicating VOC

TACTICAL / SECONDARY

Major categories of needs used to focus on tactical initiatives related to product, service, and market planning

DETAILED / TERTIARY

Detailed customer needs (in their own words) that provide definition to the secondary groupings



A TRADITIONAL PRIORITIZATION SURVEY

THE 20-30 SECONDARY NEEDS ARE TYPICALLY
RATED IN A SURVEY:



IMPORTANCE

How important is
the need to
customers (1-100
scale)



PERFORMANCE

How is the market
performing on each
need (0-10 scale)



THE CHALLENGE

Sometimes, performance ratings are closely clustered together and all attributes receive similar scores



AN EXPERIMENT

THE EXPERIMENT

Leveraging the traceability and succinct nature of machine learning data sources

Rather than rate traditional needs on *performance*, rate customer anecdotes in the form of quotations on *reliability*



EXAMPLES OF REFRAMING

TEST

Verbatim Quotation



"Sometimes while I'm making my smoothies I have to remove it from the base and shake it or else it gets jammed and doesn't actually blend anything."



"I had a bad experience letting stuff dry on the blades or the seals. It's only easy to clean if you rinse right after each use."



"Got this product last week and noticed that each time I used it, I found plastic 'dust' and 'flakes' where the cup is coupled with the motor."

CONTROL

Traditional Need

Assured I never have to worry about the tightness of the blade on my blender

Easy to clean even if I don't clean right away

Never have any issues with rust, oily residue, plastic flakes or metallic residue



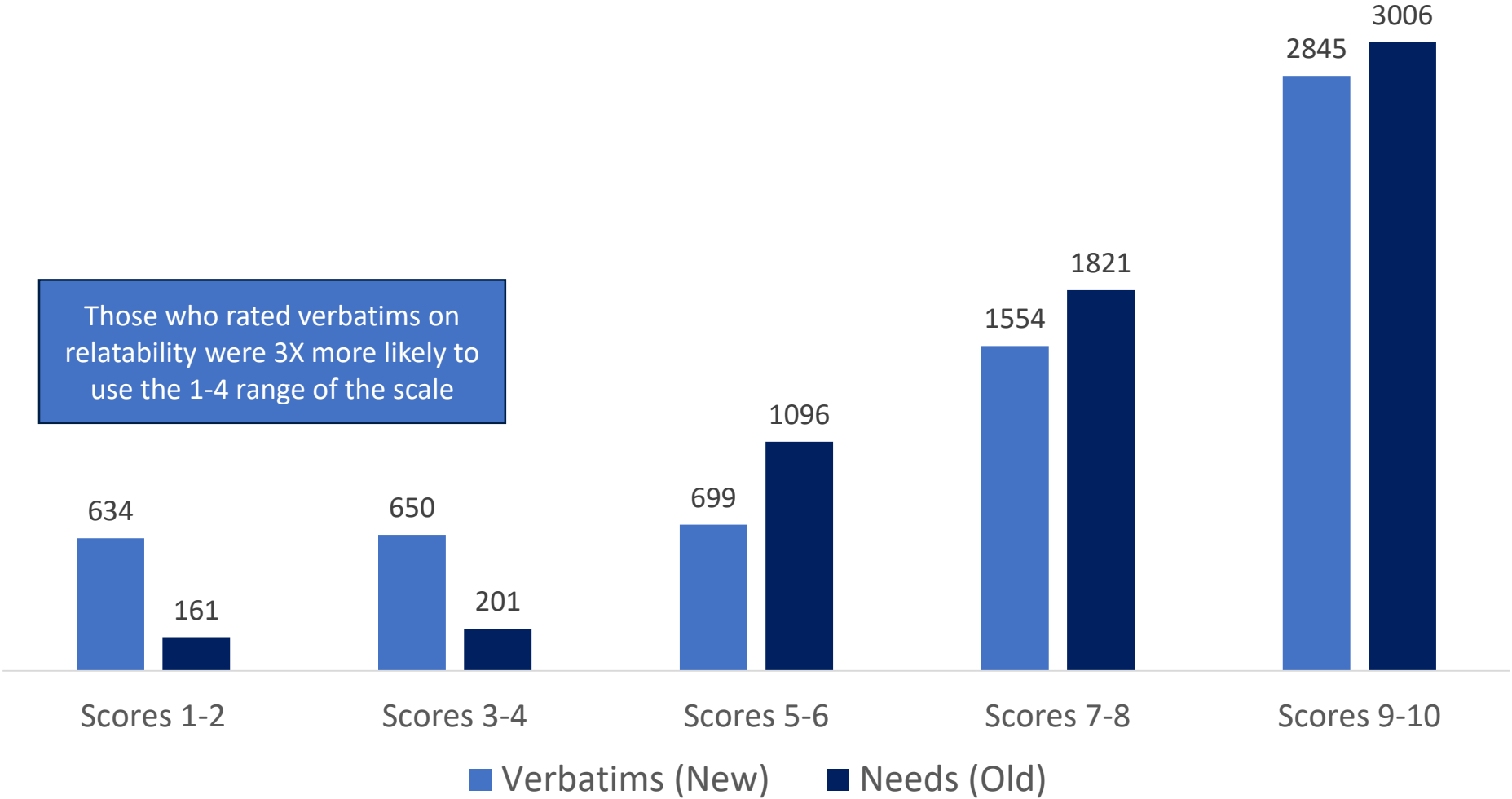
FINDING: HAVING RESPONDENTS EVALUATE THE RELATIBILITY OF VERBATIMS IS POWERFUL

GREATER VARIATION IN THE MEAN SCORE ACROSS ATTRIBUTES AS MEASURED BY STANDARD DEVIATION

GREATER VARIATION IN INDIVIDUALS' RESPONSES



ATTRIBUTE SCORES





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Principal

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LOOKING TO BRING YOUR INSIGHTS TO THE NEXT LEVEL?

Request a **complimentary consultation**
to discuss how your organization can begin to
experiment with machine learning!

Request a complimentary consultation:

<http://bit.ly/TalkToCarmel>

Learn more:

<http://bit.ly/MLGuide>

Visit us online: www.ams-insights.com

