IRONWOOD INSIGHTS group, LLC

What's Driving Your Customers' Satisfaction?

FINDING THE STORY USING ADVANCED ANALYTICS

Ironwood Insights Group's Advanced Analytics Department uses several statistical tools that can help you to identify the key driver attributes that are most important to your customers.

It is often useful to learn about the drivers of general attitudinal outcomes such as overall satisfaction. A common strategy is to conduct a survey and include both general attitudinal questions and more specific measures of different attributes (convenient location, fast service, open late, etc.). For each of the more general outcomes, we can assess the degree to which it is driven by the various more specific measures.

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Attributable Effects

This type of key driver analysis is often done using linear regression. At Ironwood we offer an analytic tool that is designed to yield more actionable information about your customers. It is known as Attributable Effects analysis.

Attributable Effects analysis is a probability-based analysis that partitions the impact of each possible driver (or attribute) into two components: upside and downside. The goal of Attributable Effects analysis is to identify areas of greatest opportunity (expressed as Upside), and areas of greatest risk (expressed as Downside).

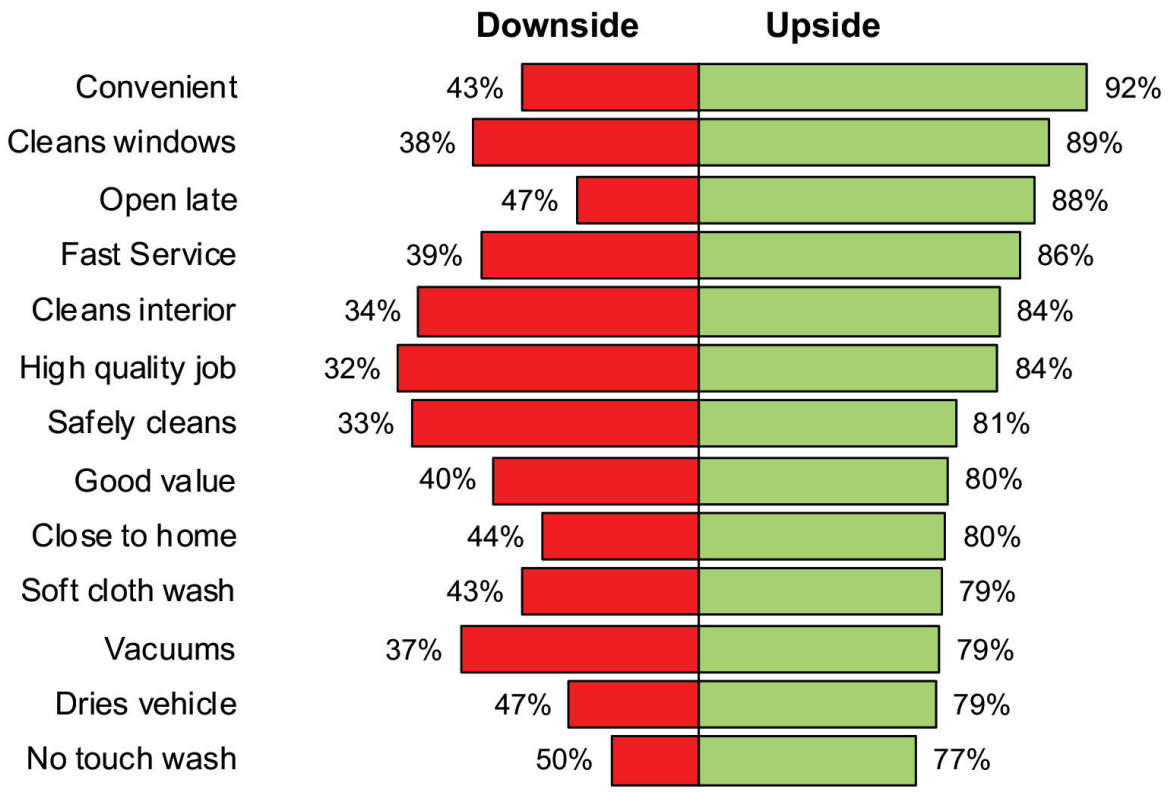
"Upside" is the highest possible percentage of satisfaction that could be attainable if all the customers who are dissatisfied with a particular attribute became satisfied with that attribute. Upside is usually largest when current performance of that attribute is weak, and it is closely related to satisfaction.

"Downside" is the lowest possible percentage of satisfaction that could be possible if all the customers who are satisfied with a particular attribute became dissatisfied with that attribute. Downside is usually largest when current performance of the attribute is strong, and it is closely tied to satisfaction.

An example will help to explain how this statistic works and how to interpret the results. In this example, all evaluations were obtained using a 5-point rating scale for overall satisfaction and for each of the attributes. To perform the analysis, the data have been dichotomized into top two box vs. bottom three box responses to facilitate the analysis.

The example on the next page is for a local car wash.

ATTRIBUTABLE EFFECTS



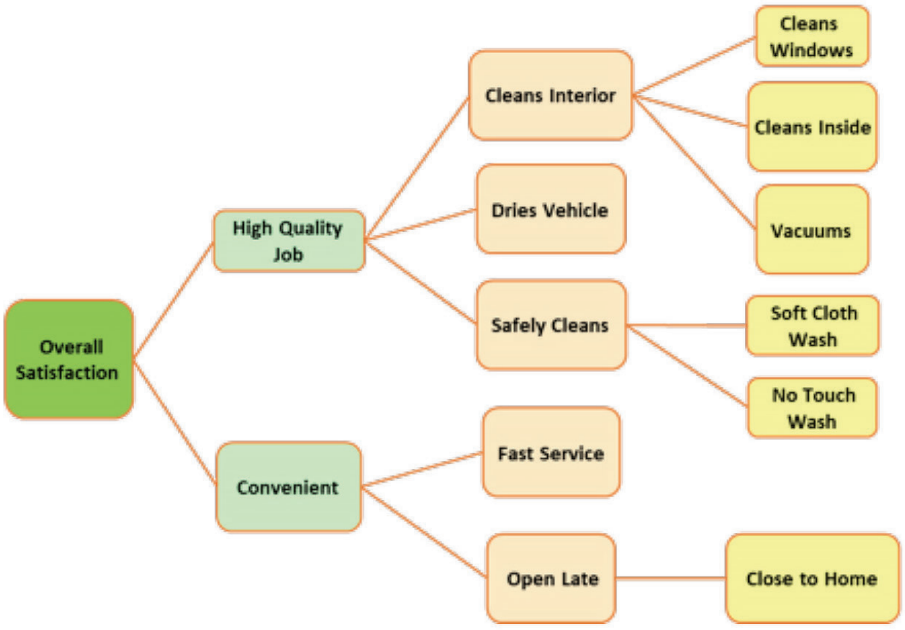
In the **tornado chart** above, the 60% number at the bottom of the chart indicates that the top two box score for overall satisfaction is 60%. The bars show the potential "upside" and "downside" to overall satisfaction that is possible with a change in each individual attribute.

For example, if everyone who is currently dissatisfied (bottom three box) with the "convenient" attribute were to change their opinion and became satisfied (top two box) with that attribute, then overall satisfaction could increase from its current 60% level all the way up to 92% satisfied (top two box). This is the "upside" potential.

Inversely, if everyone who is currently satisfied (top two box) with the "convenient" attribute were to change their opinion and became dissatisfied (bottom three box) with that attribute, then overall satisfaction could decrease from its current 60% level all the way down to 43% satisfied (top two box). This is the "downside" potential.

With Attributable Effects analysis, we can see that promoting "convenience" offers greater opportunity for solidifying current customers who are less than completely satisfied. On the other hand, quality and safety perceptions must be maintained in order to keep currently satisfied customers content. The value of Attributable Effects analysis is that it can identify specific areas that need attention in order to increase the satisfaction of customers.

GRAPHICAL MODEL



From the **Attributable Effects** analysis, we know that the attribute with the largest upside potential is the "convenient" attribute. From the graphical model above we can see that a car wash owner is going to need to focus on the root causes that drive convenience, namely "fast service," and "open late."

Biplots

The owner may not easily address the "close to home" attribute but can easily address the hours of operation and the speed of a car wash.

If an owner wants to know how they are perceived in the marketplace compared to the competition on those attributes defined as most important, the use of biplots can be most helpful. The Biplot display is a commonly used multivariate method for graphing row and column elements using a single display (Gabriel, 1971).

This method has been used to display objects and variables on the same graph in principal components analysis, row and column factors in correspondence analysis, in canonical discriminant analysis, metric multidimensional scaling, redundancy analysis, or canonical correspondence analysis.

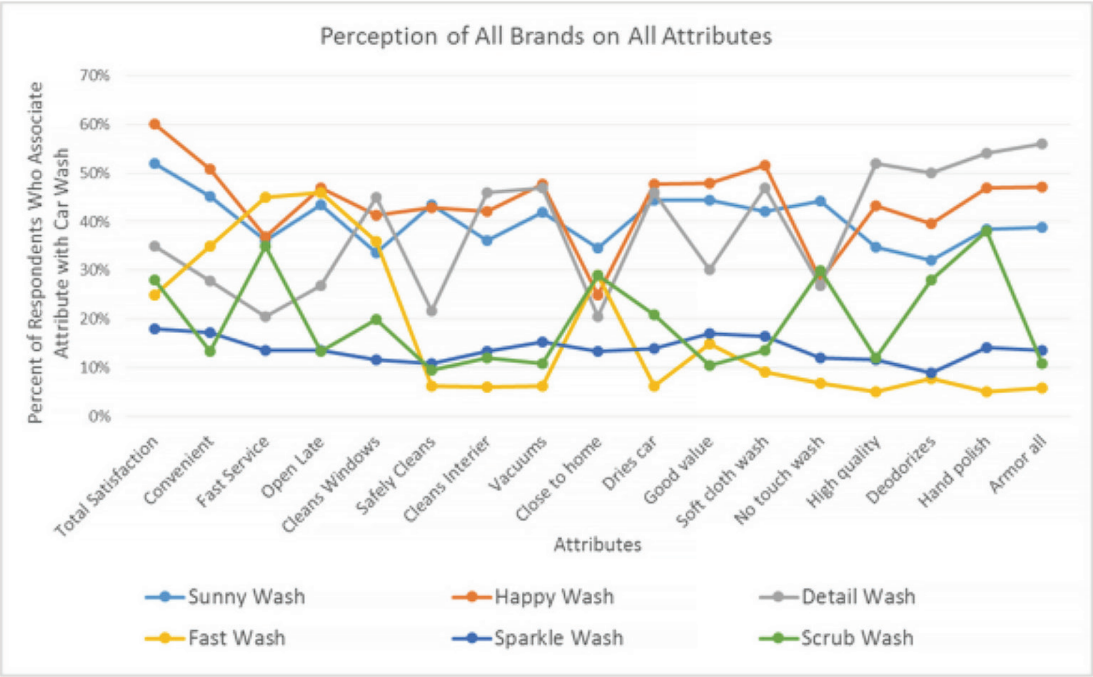
Biplot displays are commonly used in the analysis of data from ecological and environmental studies. We have found them quite useful in market research when evaluating competitors on various attributes of care or service. The example below is again from our local car wash. We asked consumers in the market community to:

- Only rate car washes that they are familiar with and have interacted with,
- Only rate two or three different car washes, even though they might be familiar with more,
- Go through a checklist and identify (yes or no) which attributes are exhibited by each car wash being evaluated.

The objective of the Biplot is to describe brand differences on several attributes in a few dimensions. In our case we treat the attributes as variables (columns) and the different brands as observations (rows).

The easiest way to look at the results is to present the data in a simple line graph. The next graph (**Figure 1**) clearly shows that Happy Wash scores high on most, but not all, attributes.

[Figure 1 – Simple Line Graph]



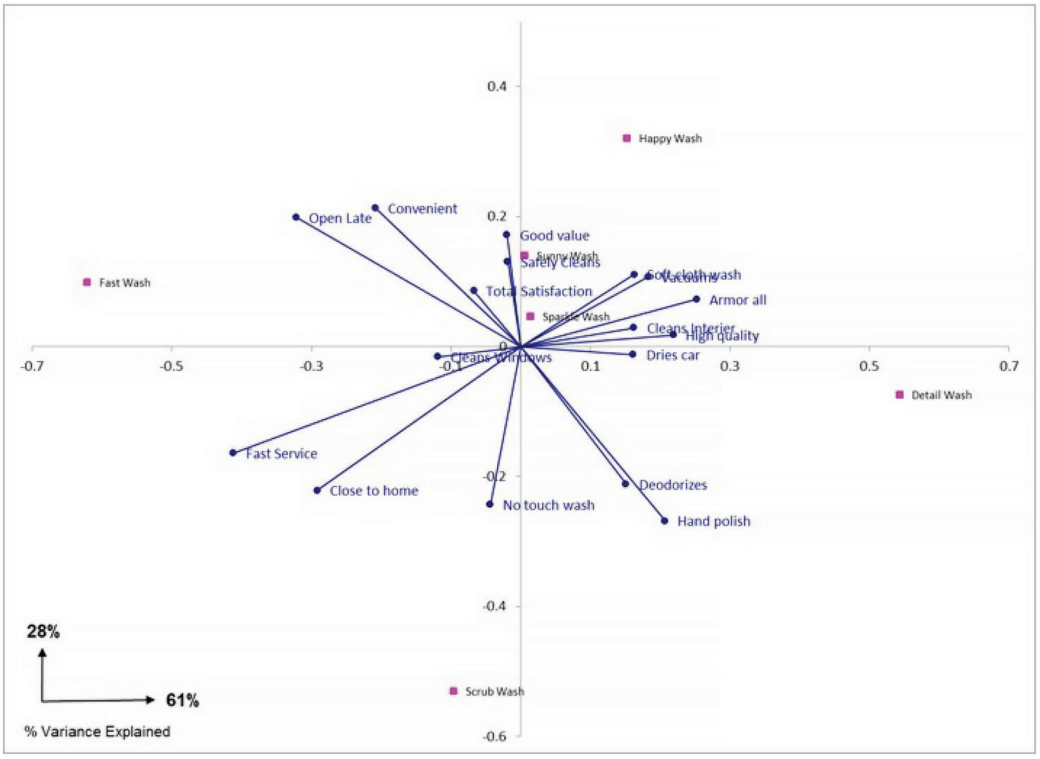
[1]Gabriel, K. R. 1971. The biplot graphic display of matrices with applications to principal component analysis. Biometrika 58: 453467.

The objective of using **Biplot analysis** is to get a better understanding of how strong your brand is compared to the competition on the different attributes being evaluated.

A Biplot of the car wash data is shown in the next graph (**Figure 2**). In this plot, brands are shown as points and attributes are shown as vectors. The prefix "bi" refers to the fact that both brands and attributes are shown on the same plot. The data have been standardized and centered so that the horizontal and vertical axes are drawn through the origin (0,0). About 89% of the information about brand differences is explained in this Biplot.

The legend in the lower left-hand corner of the Biplot shows that 61% of the variance is explained on the horizontal (X) axis, while another 28% of the variance is explained on the vertical (Y) axis. Combined, this Biplot explains 89% of the variance between the brands and attributes.

[Figure 2 – Biplot Graph]



There are several "rules" that should be used in reading Biplots:

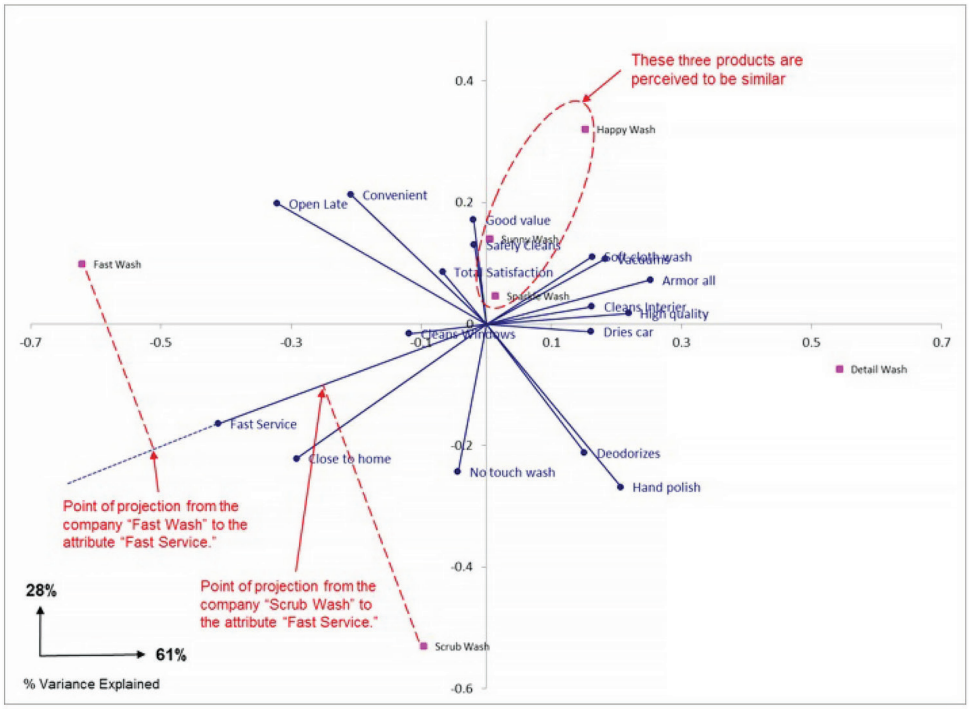
- The vectors or lines represent the product characteristics. The pink boxes with names represent the product brands, in this case, the different car washes.
- Products close to each other are more similar.
- The longer the vector, the more discriminating that characteristic is across the products.
- Vectors that are very close to each other are highly correlated.
- Vectors at a 90° angle from each other are not correlated with each other (e.g., "Close to home" and "Hand polish" are not correlated with each other).
- A product's relationship to a vector is obtained by "projection."
- Draw a line from a product to a vector of interest and note the place at which the two intercept at 90°. This represents the position (point of projection) of the product on the characteristic.
- The closer the product is projected to the upper end of the vector, the more strongly it was rated on the characteristic represented by the vector.

In **Figure 3**, on the next page, we see how we can analyze our Biplot to better understand the local car wash data.

- Both Fast Wash and Scrub Wash are considered to provide "Fast Service." However, since Fast Wash projects onto the "Fast Service" attribute line at a higher level (further away from the 0,0 point on the axes), it is considered to be stronger on that attribute.

- Three car washes, Sparkle Wash, Sunny Wash, and Happy Wash all occupy the same market perception space. They do well on the "Good Value," "Safely Cleans," "Soft cloth wash," and "Vacuum" attributes. Since Happy Wash is further away from the 0,0 point on the axes, it is perceived stronger than the other two on those attributes.
- Two car washes, Fast Wash and Detail Wash, occupy totally different positions in the marketplace. Fast Wash is perceived as being "Fast" and "Convenient" while Detail Wash is known for providing "Hand polish" and "High quality."

[Figure 3]



Conclusion

In summary, the Biplot can…

- ✓ Help you understand how your product is perceived compared to the competition.
- ✓ Reveal which competitors are similar and which are different on individual attributes.
- ✓ Help you to understand which attributes best differentiate you from the competition and how those attributes are related to one another in the mind of the consumer.

Whether you have a small dataset of car washes or a large dataset of consumer-packaged goods, the Biplot is an efficient way to organize, present, and interpret the results of your competitor research.