

# Brand Equity Estimation

## A Demonstration

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### Introduction

The paper demonstrates a viable solution to estimating “Brand Equity” using assets that are also generally used to help understand the cause/affect or “key driver” relationship regarding a person’s opinion of their satisfaction with their primary Brand, and their overall satisfaction with the Brand most often used.

The process herein involves developing a relationship or cause/affect model between the set of attributes and overall satisfaction then segmented by the Brand most often used. It uses an ordinal based 7-point low to high Likert scale anchored at the end points. The more common cause/affect modeling tools include General Linear Regression, Ordinal Univariate Analysis and Analysis of Covariance. Each has special data considerations while at the same time an overlap in the results provided. The GLR model is demonstrated here for the internal consistency of the data along with other tests allows for the interpretation of ordinal data as interval.

### Set-up for Brand Equity Estimation

The basis here is the “assumption” that a respondent’s opinions for various attributes affect overall satisfaction with the Brand used most often. That is, as a person’s opinion toward the attributes of a Brand become more favorable so does their tendency to have a higher level of overall satisfaction – more pronounced brand equity. Thus, an overall cause/affect model can be developed as well as individual models for each Brand used most often. When comparing the attributes Brand-by-Brand, the Brand with the highest “overall rating,” as defined by the cumulative sum of derived indices, has the greatest brand equity.

The result from these models is presented in Table 1 [standardized regression or beta coefficients]. Table 2 presents the indices [overall ratings] derived to estimate brand equity.

### Brand Equity Indices

The Brand Equity Indices were derived using the overall model’s result [the beta coefficients by attribute without any split by Brand] as the basis, and then comparing each Brand, by attribute, to that basis. The indices are the ratio between each attribute’s beta within each Brand and the overall beta for that attribute. Once all indices are derived, the sum should give a composite indicator [overall rating] of brand equity.



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**Notes:** Only cases where respondents answered all attribute rating questions [termed listwise deletion] are used in this brand equity estimation study.

The reader might notice that the development of the regression coefficients is akin to one of several techniques used to estimate derived importance.

One should not view the results as an indication of “market share.” Just because a brand has high equity [imagery] does not necessarily mean that it has high market share.



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### Estimation of Brand Equity

The following table displays the results of the linear regression model for Overall Satisfaction as the dependent variable and the various attributes [independent variables, not done as a stepwise procedure]. Thus, the numbers in the table represent the respective standardized regression [beta] coefficient and can be interpreted as a “correlation” between the particular attribute and overall satisfaction.

For example, V1 *Cell attachment and growth* has the strongest relationship of all attributes to overall satisfaction [beta of 0.143] when the entire response set is considered regardless of Brand. Further, the relationship is significant at the 90% level. When the regression model is run by Brand, V1 *Cell attachment and growth* continues to be significant for all Brands except Brand D.

V5 *Lot number traceability*, on the other hand is not significant at the 90% level overall and only one Brand [D] finds it significant. Thus, in the indexing phase, V5 will be ignored.

**Table 1**  
**Linear Regression, Likert Scale Treated as Interval**  
**Overall and by Brand**

Satisfaction Series	Overall Parameter Beta (n=1033)	Brand (Response Base)				
		A (n=293)	B (n=281)	C (n=124)	D (n=78)	E (n=149)
V1. Cell attachment and growth	0.143	0.165	0.256	0.170	0.073	0.374
V2. Design minimizes/prevents contamination	0.112	0.104	0.128	0.104	-0.042	0.039
V3. Easy-to-handle/manipulate	0.140	0.127	0.131	0.064	0.281	0.062
V4. Easy-to-label/identify	0.059	0.059	0.040	0.126	0.071	0.097
V5. Lot number traceability	0.021	-0.015	0.042	0.027	0.242	-0.010
V6. Lot-to-lot consistency	0.054	0.127	0.103	-0.126	-0.020	-0.098
V7. Method of sterilization	0.058	-0.001	-0.010	0.173	0.132	0.139
V8. Optical clarity	0.058	0.130	0.004	0.008	-0.072	-0.053
V9. Packaging	0.073	0.095	0.039	-0.023	0.131	0.222
V10. Price	0.099	0.096	0.135	0.243	-0.035	0.162
V11. Size ranges available	0.079	0.054	0.007	-0.043	0.222	0.182
V12. Stackability	0.113	0.083	0.086	0.278	0.136	0.063
V13. Surface* options available	0.082	0.044	0.099	0.149	0.016	-0.006

Dependent Variable is “Overall, how satisfied are you with <<Brand>> plasticware used for tissue culture?”  
 Highlights denote significant at the 90% level



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### Indexing Phase

Table 2 below is the index table with each number representing the relative “weight” between the Brand’s attribute beta coefficient and the overall beta coefficient based on the entire response set. Brand A’s *Cell attachment and growth* index of 1.149 indicates that respondents who most often use Brand A are more likely to deem this attribute as being more of a contributor of overall satisfaction than the response set overall [ $0.165 / 0.143 = 1.149$ ]; the “importance” of this attribute is even more pronounced in its impact on overall satisfaction among Brand E users whose index is 2.605 [ $0.374 / 0.143 = 2.605$ ].<sup>1</sup>

Once each Brand index is determined and summed the resulting cumulative index offers an indication of Brand Equity. These results follow the table and are summarized on the next page.

**Table 2**  
**Linear Regression, Likert Scale Treated as Interval**  
**Overall and by Brand**  
**Index Table**

Satisfaction Series	Brand (Response Base)				
	A (n=293)	B (n=281)	C (n=124)	D (n=78)	E (n=149)
V1. Cell attachment and growth	1.149	1.787	1.185	0.509	2.605
V2. Design minimizes/prevents contamination	0.921	1.142	0.927	-0.375	0.343
V3. Easy-to-handle/manipulate	0.911	0.935	0.458	2.006	0.440
V4. Easy-to-label/identify	0.995	0.672	2.124	1.190	1.639
V5. Lot number traceability	NS	NS	NS	NS	NS
V6. Lot-to-lot consistency	2.328	1.884	-2.314	-0.373	-1.807
V7. Method of sterilization	-0.013	-0.169	2.993	2.283	2.407
V8. Optical clarity	2.222	0.074	0.130	-1.232	-0.914
V9. Packaging	1.312	0.531	-0.323	1.802	3.057
V10. Price	0.969	1.363	2.457	-0.358	1.640
V11. Size ranges available	0.677	0.084	-0.541	2.802	2.299
V12. Stackability	0.736	0.762	2.464	1.205	0.556
V13. Surface* options available	0.532	1.210	1.819	0.196	-0.072
<b>Index Sum</b>	<b>12.738</b>	<b>10.275</b>	<b>11.378</b>	<b>9.654</b>	<b>12.193</b>

<sup>1</sup> The index table cell results might differ if one divides the beta coefficients in each table due to rounding.



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### Brand Ranking by Index Score

The following summarized the Brands by Index Score. All key attributes used to determine a significant cause/affect relationship to overall satisfaction finds that Brand A has the highest Index or Brand Equity among the five Brands analyzed.

Brand Rankings	Index Score
A	12.738
E	12.193
C	11.378
B	10.275
D	9.654

The next step is to “map” the results using the mean overall satisfaction score for comparative purposes. Thus, even though a Brand has the highest overall satisfaction does not necessarily mean it has the highest Brand Equity when compared to an overall impression of which individual attributes are key drivers of satisfaction.

The mean overall satisfaction scores are displayed below.

Brand	Overall Satisfaction
B	6.08
A	6.02
D	5.92
E	5.84
C	5.74



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The following graphic shows the Brand positions under this model taking Overall Satisfaction into account.

This suggests that, while Overall Satisfaction might be high, Brand Equity has more to do with the cumulative affect of the attributes that are significant to the market [based on this response set].

Though Brand B has the highest overall satisfaction rating (6.08), its brand equity index [10.275] under this model's scenario is less than Brand A [12.738] and Brand E's [12.193].

