FPi Monitor
A Research Newsletter
Produced by Flexo & Partners, Inc.
2005
Number 2

Making Customer Satisfaction Actionable:

Event Versus Attitude Based Measurements

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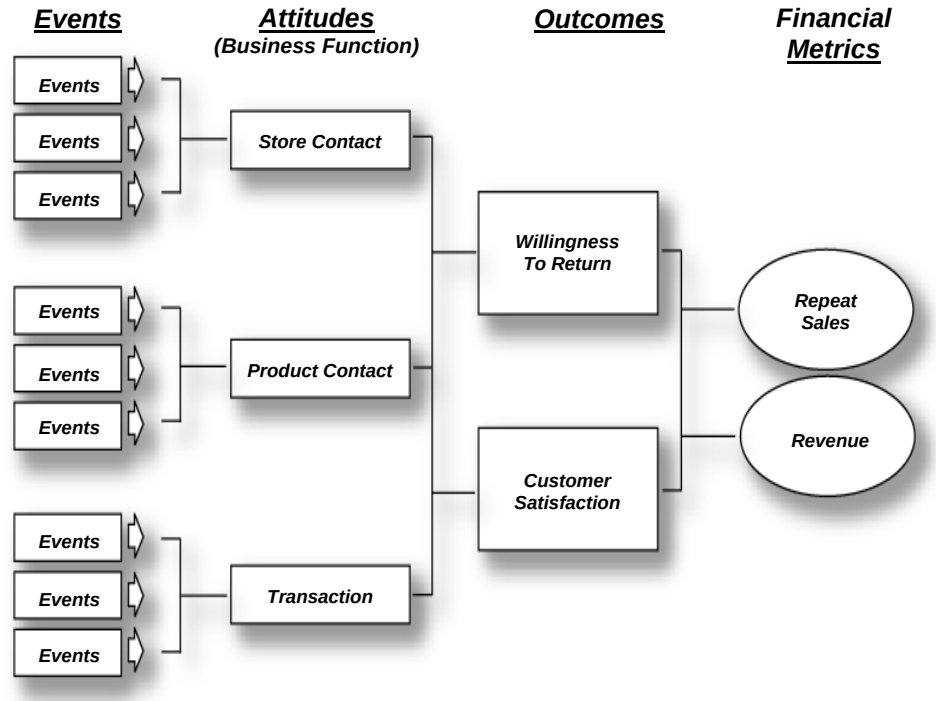
Useful customer satisfaction measurement systems typically include a relatively large number of diagnostic questions designed to assess individual customer experiences with a firm's product or service. There are two types of diagnostic measurements in use today, attitude and event based measurements. This edition of the **FPi Monitor** describes these measurement systems, and presents a quantitative test of event and attitudinal based assessments. We also provide a detailed schematic for those interested in transitioning to an event-based design.

Figure 1
Customer Satisfaction Measurement Model
Retail Schematic



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HIGHLIGHTS

Making Customer Satisfaction Actionable: Event Versus Attitude Based Measurements

Useful customer satisfaction measurement systems typically include a relatively large number of diagnostic questions designed to assess individual and unique customer experiences with a firm's product or service. For instance, a customer satisfaction questionnaire may include an item such as "On a scale of 1 to 10, how satisfied were you with the way the sales representative answered your questions?" Or, it might include "Did the desk clerk politely welcome you?" These types of questions are used to diagnosis and isolate key problems that must be fixed in order to improve overall satisfaction.

There are two types of diagnostic measurements in use today, attitude-based and event-based measurements. Examples of each are shown in Table 1 (below).

Attitudes are summary outcomes or evaluations. As noted in the example, attitude-based customer satisfaction questions ask customers to rate on a scale (such as 1 to 10) how they feel toward individual experiences they may have had with a company's product or service. Responses are then aggregated into convenient groupings and reported as top 2 or 3 "box" answers.

Alternatively, event-based assessments quantify the occurrence of an actual, concrete experience. As noted in the example below "Did the sales representative answer your questions?" is an event-based measurement. It is written in terms of yes/no, or "did this happen/not happen" type of questioning. The occurrence of an event is recorded and aggregated across respondents, yielding a success rate (or problem occurrence rate) per 100 customers for each event or experience.

What is the Value of an Event-based Customer Satisfaction System?

The value of shifting to an event-based measurement system from an attitudinal one is very significant. We've noted (Casro Journal 2001) how event-based systems improve data quality, eliminates halo effects, and provides managers with more relevant, actionable data that can be used to make financially-based decisions.

Table 1
Customer Satisfaction Measurement Types

Event Based	***Attitude Based***
Did the sales representative answer your questions?	On a scale of 1 to 10, how satisfied were you with the way the sales representative answered your questions?
Did the desk clerk politely welcome you upon arrival?	How satisfied or dissatisfied were you with the politeness of the desk clerk?
On your last visit, were prices higher, same, or less than you expected?	On a scale of 1 to 5, how satisfied were you with prices on your last visit?

"Event-based systems improve data quality, eliminates halo effects, and offers a means for financial modeling."

Improved Data Quality: Event-based assessments in customer satisfaction are more natural for respondents to answer. Respondents do not have to deconstruct their experiences, then reconstruct them into an attitude or evaluation, and then place these thoughts on a scale. Rather, respondents simply have to recall and report back whether an event occurred (or did not occur). This makes event-based questions much easier for respondents to answer. It eliminates measurement error and data become more accurate and reflective of the actual experience.

Eliminates Halo Effect: To reduce effort, respondents will tend to settle on an attitudinal evaluation, or point on a scale, and then use this same evaluation across all experiences. This is called the halo effect. The halo effect causes individual diagnostic scores to be the same, leaving little if any differences in diagnostic measurements. The halo effect, common in attitudinal measurements, is eliminated with an event-based approach. Events are measured as discrete, isolated events so one measurement is not related to others. With the halo effect removed, event-based diagnostic assessments become a more viable gauge of what really happened.

Offers Financial Modeling: With an event-based design, the occurrence of a specific customer experience (or event) can be easily assigned a unit cost. Unit costs can then be multiplied by discrete problems (or failures) per 100 customers (or by any number of customers) to arrive at total costs

to fix any discrete event. When modeled against a satisfaction outcome variable, managers will know the return on their investment of any and all actions they can possibly take to optimize the financial returns of a customer satisfaction program.

Quantitative Test of Event Versus Attitude Measurements

In a recent issue of Marketing Research Magazine (Fall 2003) Wittink and Bayer quantitatively tested the validity of event versus attitude-based diagnostic measurements in a customer satisfaction context. They found that events were more valid and reliable than attitudes in explaining customer satisfaction.

Following up on this article, we conducted our own tests comparing the validity of attitude and event-based diagnostics measurements using data we collected on people's experiences at fast food restaurants.

In the study conducted at our Data Center in Long Beach, CA, we interviewed 500 consumers of fast food over the telephone. We used standard RDD techniques, yielding a probability sample and a margin of error of +/-4%. The questions were event and attitude diagnostic satisfaction items randomly distributed across respondents. Different questions were posed to respondents that used the drive thru and those that went inside the restaurant. This sample design allows us to directly compare the validity of event versus attitude-based assessments in two conditions (drive thru versus inside restaurant).

Which is a more valid test of customer experiences, event-based or attitude-based scales? The best way to compare the statistical validity of one scale versus another is to investigate the inter-correlation among scale items. When scale items are inter-correlated, it means scale responses *are not independent of one another*. When there is inter-correlation, individual measurements do not accurately reflect the unique experience that is being measured. With an inter-correlated data set, independent diagnostic scale assessments are not as valid.

Transitioning to an Event-based System

How do company's transition from an attitudinal-based system, to a more valid and beneficial event-based customer satisfaction approach?

Attitudes are evaluations or outcomes that arise from an experience with a product or service. As an outcome, attitudes are driven by experiences or events. Therefore, to turn an attitude-based system into an event-based system, one needs to deconstruct each attitude measurement into its component parts. These parts represent the unique, concrete experiences that are the diagnostic measurements in an event-based system.

Figure 1 on page 1 shows an event-based customer satisfaction model. Evident is the association between event-based assessments and attitudinal measurements. Events precede attitudes. In each case, events explain the attitudinal construct. All feed into a final outcome assessment, generally a measurement of customer satisfaction.

Adding events to a customer satisfaction system typically begins with facilitated, highly structured meetings with marketing research departments and operations managers. It might also include customer focus groups. The purpose is to deconstruct attitude-based assessments (in each business function) into individual component parts or events. Out of these meetings will come an event-based schematic, showing the connection between events and the attitude measurements that come from the existing measurement instrument.

Typically, there are a very large set of events and customer experiences identified in management meetings and focus group discussions. Each event must then be reviewed and the best event-based questions selected using the following criteria:

1. Does the event measure a single experience, or does it closely resemble or match other questions? In other words, is each event question unique and different from all other events and experiences being measured?
2. Was the question explicitly worded in a way that would *not* require further management interpretation of what to do to fix a problem?
3. Can unit costs (or other financial outcome) be applied to the question, or how much would it cost to fix the event if it appeared as a problem?
4. Was the question written in a way that would make sense to consumers/ respondents and thus could be answered easily and consistently across respondents?

As shown here, companies with attitudinal systems need only add event-based diagnostic elements to their systems in order to make them more valid and useful to the organization. When events are used as the primary diagnostic assessment, attitudes that used to function in this capacity will no longer be needed. Eventually, given problems with attitudinal measurements, they should be turned into latent constructs, or eliminated entirely, so the actual concrete customer experiences and events may explain customer satisfaction.

Theoretically, there is likely to be much more inter-correlation in attitude-rating scale measurements than in event-based measurements. It is quite difficult, and more effortful for respondents to translate an experience into a rating scale as required by an attitude measurement, as opposed to merely reporting on an experience as is done in event-based assessments. To minimize effort, respondents tend to settle on a single attitude score and use this as a base when scoring all (or most) other experiences. As a result, attitude rating scale scores for individual respondents tend to be very similar and inter-correlated. This is not the case with event-based assessments that require no translation or interpretation, and which measure discrete, isolated events. As such, attitude scale measurements are more likely to resemble one another, and to be inter-correlated and less valid, than event-based assessments.

"The results of attitude-scale measurements are more likely to resemble each other, and to be inter-correlated and less valued than event-based assessments."

Range of Correlation Test

A simple means of testing the inter-correlation among scale measurements is to investigate the range of bivariate correlations that exist between the diagnostic assessment and a key dependent variable such as overall customer satisfaction. A large range would indicate less inter-correlation and diagnostic assessments that are more valid.

Table 2a (below) presents the range of correlation coefficients between event and attitude measures and overall satisfaction data for respondents that walked into the restaurant to order their fast food meal. As shown, the range between the lowest and highest correlation coefficient for the event-based measurement is larger (.217), than for the attitude-based assessments (.110).

Table 2b (on next page) shows the range of correlation coefficients for drive-thru respondents. These results show the same pattern as for walk-in responses. There is a wider range in correlation coefficients between the event-based assessments and overall satisfaction (.416) compared with the attitude-based assessments and overall satisfaction (.346).

These "range of correlation" results indicate quantitatively that event-based assessments are a more valid means for diagnosing the impact of individual consumer experiences on satisfaction than offered by attitude-scales.

Table 2a:
Correlation Coefficients
Against Overall Satisfaction – Inside Restaurant

Event-Based Assessments (Inside Restaurant)

As you walked up to the entrance to (RESTAURANT), did you notice trash or debris on the ground or anywhere in the area outside the restaurant?	.192
Was landscaping well groomed and maintained?	.218
As you walked in the (RESTAURANT), did you notice trash, empty trays, or other debris on the floor or tabletops?	.279
Inside, did the restaurant appear cluttered with too many signs on the walls and windows?	.093
At the counter, was a person there ready to take your order, or did you have to wait for someone to come over to take your order?	.279
Did the person who took your order have a friendly and welcoming attitude?	.245
Did the person who gave you your food thank you for coming to the restaurant that day?	.096
Was what you received exactly as you ordered it, or were there mistakes in your order when you received it?	310
Range of Correlations (Highest and Lowest)	**.217**
Range of Correlations (2nd Highest to 2nd Lowest)	**.183**

Attitude-Based Assessments (Inside Restaurant)

On scale of 1 to 5, with 1 being extremely dissatisfied, and 5 extremely satisfied…	
How satisfied were you with the overall cleanliness and maintenance of the (RESTAURANT) on your last visit?	.484
How satisfied were you with the length of time it took to make your order?	.493
How satisfied were you with the length of time it took to get your food after you had made your order?	.509
How satisfied were you with the politeness and friendliness of the staff?	.594
How satisfied were you with the efficiency of the staff?	.588
How satisfied were you with the taste of the food?	.586
Range of Correlations (Highest and Lowest)	**.110**
Range of Correlations (2nd Highest to 2nd Lowest)	**.095**

Table 2b: Correlation Coefficients Against Overall Satisfaction – Drive Thru

Event-Based Assessments (Drive Thru)	
When you reached the menu board at (RESTAURANT), did the person who took your order have a friendly and welcoming attitude?	.318
Could you clearly and succinctly understand the person who took you order at the menu board?	.354
Did you have to repeat your order more than once to get it right?	.103
Did the person at the food window have a welcoming and friendly attitude?	.519
Did the person at the food window appear to be working to get your order as quickly and efficiently as possible?	.453
Was what you received exactly as you ordered it, or were there mistakes in your what you received?	.483
Range of Correlations (Highest and Lowest)	**.416**
Range of Correlations (2nd Highest to 2nd Lowest)	**.165**

Attitude-Based Assessments (Drive Thru)	
On scale of 1 to 5, with 1 being extremely dissatisfied, and 5 extremely satisfied…	
How satisfied were you with the time it took waiting in line before getting to the menu board where you could give your order?	.423
How satisfied were you with the friendliness and politeness of the person who took your order at the drive thru menu the last time you visited (RESTAURANT)	.379
How satisfied were you with the speed and efficiency of the person working the food window?	.725
How satisfied were you with the time it took to get your food?	.703
How satisfied were you with the taste of the food?	.706
Range of Correlations (Highest and Lowest)	**.346**
Range of Correlations (2nd Highest to 2nd Lowest)	**.283**

Tests of Collinearity

Another way to examine which measurement is more valid is to test for collinearity (or multicollinearity) in a multivariate equation. Collinearity describes a condition when there is high inter-correlation among independent variables in a multivariate regression model. When there is even modest collinearity among independent variables, multivariate regression models become highly unstable (or ill-conditioned), beta coefficients unreliable, and R^2 statistics uninterruptible.

Minimizing collinearity is very important in customer satisfaction studies. This is because the relative importance of each diagnostic variable is determined by a key drivers analysis. These analyses typically employ a multivariate regression model in which the predictor variables are the diagnostic assessments, and the dependant variable is customer satisfaction. As such, using scales that minimize collinearity will make multivariate regression models and key drivers analyses much more valid and interpretable.

To test for differences in collinearity between event and attitude-based measurements, multivariate regression analysis was conducted on the fast food drive thru and inside restaurant fast food data sets. The predictor variables were the diagnostic measurements, and the dependant variable was overall customer satisfaction. Two diagnostic measurements of collinearity were investigated: eigenvalues to assess the number of unique dimensions in the data set, and variance proportions across each variable to assess how much each variable contributes to the variance of other variables.

Table 3a (next page) provides collinearity diagnostics for drive thru and inside restaurant data sets. Again, eigenvalues provide an indication of how many distinct dimensions there are among the predictor (or diagnostic) variables. The more distinct dimensions, the less data is inter-correlated. Data show event-based data have more distinct dimensions than attitude-based measurements in both data sets. Indeed, in drive thru *and* inside restaurant conditions, *attitude measurements have only one dimension*, with independent variables being very highly inter-correlated.

The extent of collinearity in the attitude-based data set can also be seen in the variance proportions when all variables have been entered in the model (see Table 3b next page). In both fast food conditions, variance proportions among the independent variables are larger in the attitude-based measurements than in the event-based measurements. This means that independent variables in the attitude-based measurements contribute substantially more to the variance of other independent variables than among the event-based scales. This is the case in *both* drive thru and inside restaurant data sets.

This final analysis shows quantitatively that event-based customer satisfaction measurements are more valid than attitude-based systems. Event measurements do a far better job of accurately assessing the experiences of customers, and should therefore be the optimal choice when designing a customer satisfaction measurement system.

Table 3a:
Collinearity Diagnostics – Eigenvalues and Condition Index "How many different dimensions do the questions measure?"

Event-Based Assessment

	(Inside Restaurant)		(Drive Thru)	
Dimension	Eigenvalue	Condition Index	Eigenvalue	Condition Index
1	**8.662**	**1.000**	**7.489**	**1.000**
2	**1.102**	**9.173**	**1.179**	**6.474**
3	.092	9.779	**.116**	**8.020**
4	.058	12.163	.075	9.929
5	.055	12.565	.058	11.278
6	.035	15.744	.039	13.895
7	.021	20.062		
8	.012	26.512		

Attitude-Based Assessments

	(Inside Restaurant)		(Drive Thru)	
Dimensions	Eigenvalue	Condition Index	Eigenvalue	Condition Index
1	**6.986**	**1.000**	**5.837**	**1.000**
2	.032	14.693	.054	10.410
3	.028	15.677	.049	10.919
4	.017	19.680	.029	14.204
5	.017	24.154	.018	17.996
6	.070	31.319	.012	21.356
7	.056	34.935		

Table 3b:
Collinearity Diagnostics – Variance Proportions In Final Condition "How much is each independent variable correlated with other independent variables?"

Event-Based Assessments (Inside Restaurant)

As you walked up to the entrance to (RESATURANT), did you notice trash or debris on the ground or anywhere in the area outside the restaurant?	.05
Was landscaping well groomed and maintained?	.00
As you walked in the (RESTAURANT), did you notice trash, empty trays, or other debris on the floor or tabletops?	.06
Inside, did the restaurant appear cluttered with too many signs on the walls and windows?	.06
At the counter, was a person there ready to take your order, or did you have to wait for someone to come over to take your order?	.16
Did the person who took your order have a friendly and welcoming attitude?	***.60***
Did the person who gave you your food thank you for coming to the restaurant that day?	.07
Was what you received exactly as you ordered it, or were there mistakes in your order when you received it?	.02

Attitude-Based Assessments (Inside Restaurant)

On scale of 1 to 5, with 1 being extremely dissatisfied, and 5 extremely satisfied…

How satisfied were you with the overall cleanliness and maintenance of The (RESTAURANT) on you last visit?	**.40**
How satisfied were you with the length of time it took to make your order?	***.63***
How satisfied were you with the length of time it took to get your food after you had made your order?	**.62**
How satisfied were you with the politeness and friendliness of the staff?	**.43**
How satisfied were you with the efficiency of the staff?	***.40***
How satisfied were you with the taste of the food?	.02

Table 3b:
Collinearity Diagnostics – Variance Proportions In Final Condition "How much is each independent variable correlated with other independent variables?"

Event-Based Assessments (Drive Thru)

When you reached the menu board at (RESTAURANT), did the person who took your order have a friendly and welcoming attitude?	**.79**
Could you clearly and succinctly understand the person who took you order at the menu board?	.11
Did you have to repeat your order more than once to get it right?	.02
Did the person at the food window have a welcoming and friendly attitude?	.05
Did the person at the food window appear to be working to get your order as quickly and efficiently as possible?	.16
Was what you received exactly as you ordered it, or were There mistakes in your what you received?	.07

Attitude-Based Assessments (Drive Thru)

On scale of 1 to 5, with 1 being extremely dissatisfied, and 5 extremely satisfied…

How satisfied were you with the time it took waiting in line before getting to the menu board where you could give your order?	.01
How satisfied were you with the friendliness and politeness of the person who took your order at the drive thru menu the last time you visited (RESTAURANT)	**.48**
How satisfied were you with the speed and efficiency of the person working the food window?	**.83**
How satisfied were you with the time it took to get your food?	**.58**
How satisfied were you with the taste of the food?	.11

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