

## The Greenwich Quality Index

(Technical definition/description of the Greenwich Quality Index)

The Greenwich Quality Index reflects all of the qualitative scores for a financial service provider (FSP) in a single number. This number is a statistical combination of the client's evaluations of their FSPs shown on a scale from 0 to 1,000, with a mean score of 500 and a standard deviation of 166.7. The Greenwich Quality Index displays the relative positions of competitors and the distribution of relationships.

### Methodology

1. Organize all of the client's responses for each program into a data matrix where each column contains a qualitative question and each row contains a client's responses to all questions about one of his FSPs.

This validation process (including outlier analysis) ensures that the calculation will be performed on the appropriate client relationships and qualitative evaluations.

2. Calculate the relationship quality for every client's evaluation(s) of FSPs.

This calculation summarizes the scores for each individual client-to-FSP relationship using the Rasch model and the maximum likelihood method. This statistical method computes a scaled score for each relationship based upon the entire set of the client's responses to the qualitative questions for each FSP.

3. Normalize and re-compute scores to the Greenwich Quality Index Scale (0 to 1,000).

Technically, we subtract the mean of the score distribution from each scaled score and divide by the standard deviation of that score distribution. These normalized scores are constrained within the (+3 to -3) range. The constrained normal scores are transformed to the Greenwich Quality Index scale by multiplying them by the standard deviation (166.7) and then adding the Greenwich Quality Index scale mean (500).

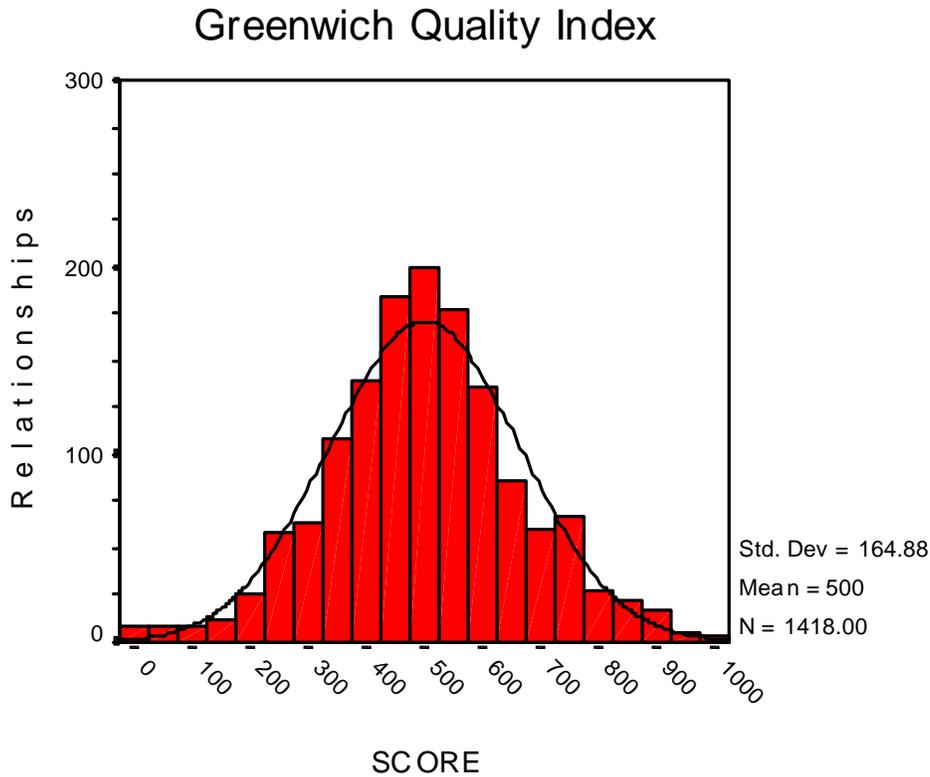
4. Compute the difficulty indicator for each client.

Technically, we subtract 500 points from the client's mean score across all FSP relationships to extract the client's deviation from the average (producing a difficulty indicator). The difficulty indicator shows how each client rates their complete set of FSPs in relation to all other clients.

### Strength of Relationship Groups

The Greenwich Quality Index Scores are then classified into five groups. These groups are comprised of approximately 10%, 20%, 40%, 20%, & 10% of the client-FSP relationships and are labeled: Outstanding, Good, Average, Marginal, & Low respectively.

**Example of Greenwich Quality Index score distribution**



**Statistically Significant Differences**

This table is intended to provide guidance for identifying differences between FSP scores. Due to the fact that each FSP will have dispersion statistics that vary, these critical thresholds are guidelines for interpreting statistically significant differences.

Confidence Level	Competitor's Relationship Base			
	500 +	100 to 500	25 to 100	10 to 25
99%	30	35	40	60
95%	25	30	35	50
90%	20	25	30	40
80%	15	20	25	30

Note: Individual comparisons may be further qualified using the statistical t-test.

## Item-Index Correlation Coefficients

Another key benefit of the Greenwich Quality Index is that the relative importance of each evaluative question as a component of overall relationship quality can be determined directly through item-index correlation coefficients (IICCs). The IICC is the Pearson correlation coefficient between the Greenwich Quality Index Score and the individual questions that comprise it. In other words, the effect of each question on relationship quality can be compared and understood.

For example: The table below displays the IICCs for the Equities Investment Management Program

### *Investment Qualitatives*

IICC	DESCRIPTION
.76	Confidence in Future Performance
.74	Clear Decision-Making Process
.74	Capable Portfolio Manager
.73	Consistent Investment Philosophy
.71	Skill in Changing Portfolio Strategy
.69	Skill in Selecting Individual Securities
.67	Past Investment Performance
.66	In-House Research Capabilities

### *Service Qualitatives*

IICC	DESCRIPTION
.80	Preparation Before/Follow-up After Formal Meetings
.78	Useful Informal Meetings
.77	Capable Relationship Manager
.75	Useful Formal Review Meetings
.73	Credibility with Investment Committee
.73	Understanding Goals and Objectives
.71	Frequency of Personal Contact
.68	Useful Written Reports

These IICCs provide the measure for comparing the effect of each qualitative question on the Greenwich Quality Index. Likewise, they can be interpreted as the loading (effect) of each variable on the factor defined by this multi-variate construction of relationship quality. The values of IICCs range from -1 to +1. Differences of .03 between the coefficients are considered statistically significant.

## Maximum Likelihood Method

The maximum likelihood method for calculating “quality of relationship” scores takes into account all of the qualitative evaluations provided by a client for a FSP.

The item response theory model is a probabilistic model. It assumes that the probability a client gives a certain score (0 or 1 on a “pick-3” and 1, 2, 3, 4 or 5 on a “scalar”) on a certain question about a certain FSP is a function of the characteristics of the question and the quality of the relationship between the client and the FSP. The better the quality of the relationship, the more likely the client will give high positive scores on the questions. This model provides a parameter describing the quality of the relationship (index score) and a parameter that describes the characteristics of the question (item differentiation). As neither the quality of the relationship nor the characteristics of the questions can be directly observed, they can only be estimated (i.e., inferred) from the observable scores given by the respondents.

Maximum Likelihood Estimation is a statistical method for calculating the unknown model parameters from the observed response matrix. This method assumes the client’s responses to different questions are statistically independent and the probability of observing a vector (and a matrix) of responses is the product of probabilities of observing each individual response. Maximum Likelihood Estimation searches for the parameter values that maximize the joint probability of observing the matrix of the responses that we have collected. These parameter values are the Maximum Likelihood Estimates of the quality of relations. The quality of relation’s “parameter” is the value calculated for each of the observed response patterns. This parameter represents the relationship score between the client and the FSP. This score has been transformed and presented on the Greenwich Quality Index Scale (0 – 1,000; mean = 500; s.d. = 166.7).

*Footnote for Assumptions:* These statistical models assume that a client's answers to questions about a FSP reflect evidence of the quality of the relationship between the client and that FSP. These models also assume that the quality of the relationship (or degree of customer satisfaction) is measurable on a scale. Also, experts have reviewed and judged the content of the questions comprising the resulting scale as domain appropriate.