

# How to Calculate Cronbach's Alpha in SPSS: A Step-by-Step Guide

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## RECOMMENDED CITATION

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Cronbach's Alpha is a statistical measure used to assess the internal consistency or reliability of a set of items or questions in a survey or test. It can be calculated in SPSS by running a reliability analysis, which can be found under the "Analyze" tab. A window will appear where the user can select the items to be included in the analysis. Once the analysis is run, the results will include the Cronbach's Alpha coefficient, which ranges from 0 to 1. For example, if a researcher wants to measure the internal consistency of a 10-item questionnaire on job satisfaction, they can use Cronbach's Alpha in SPSS to determine the reliability of the questionnaire. A coefficient of 0.8 or higher is generally considered to indicate good reliability.

**Cronbach's Alpha** is a way to measure the of a questionnaire or survey.

Cronbach's Alpha ranges between 0 and 1, with higher values indicating that the survey or questionnaire is more reliable.

The easiest way to calculate Cronbach's Alpha in SPSS is to use **Analyze > Scale > Reliability Analysis**.

The following example shows how to do so in practice.

## Example: How to Calculate Cronbach's Alpha in SPSS

Suppose a restaurant manager wants to measure overall satisfaction among customers.

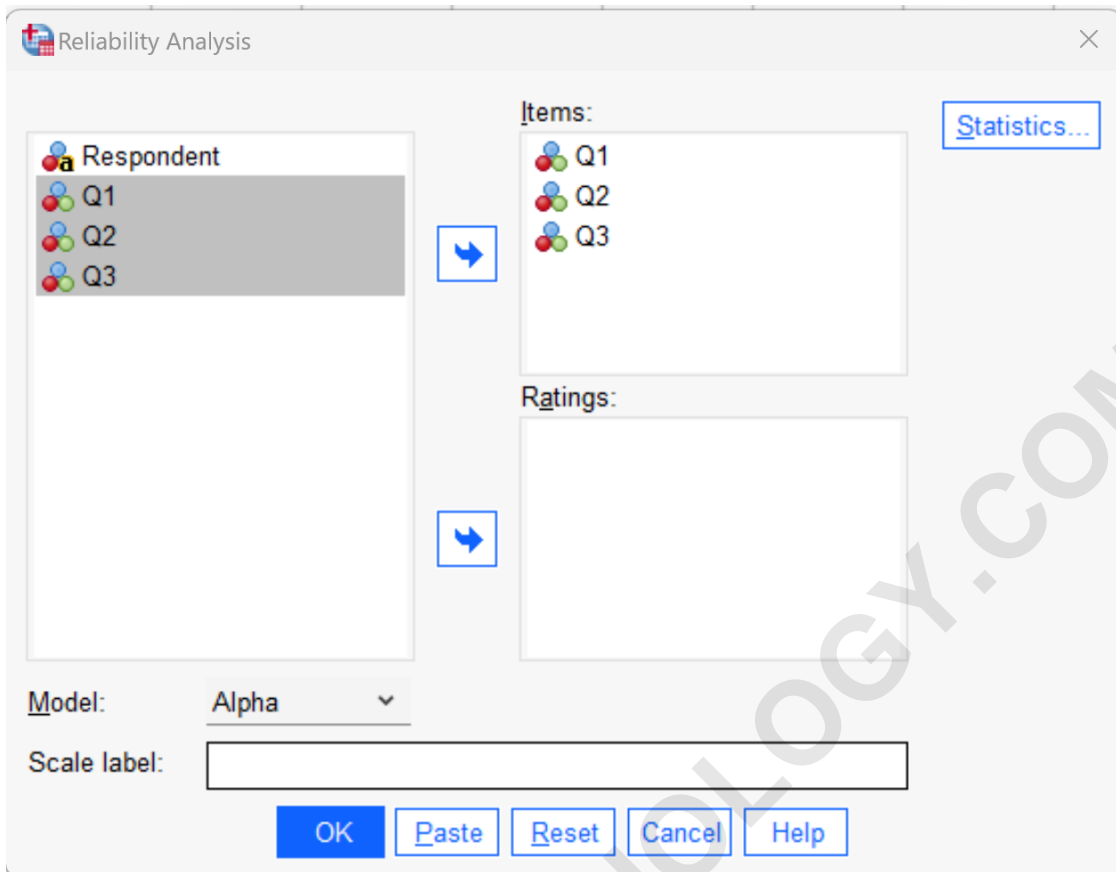
She decides to send out a survey to 10 customers who can rate the restaurant on a scale of 1 to 3 for various categories.

The following dataset shows the ratings that each of the customers gave to the 3 questions on the survey:

	Respondent	Q1	Q2	Q3	var
1	A	1.00	1.00	1.00	
2	B	2.00	1.00	1.00	
3	C	2.00	1.00	2.00	
4	D	3.00	2.00	1.00	
5	E	2.00	3.00	2.00	
6	F	2.00	3.00	3.00	
7	G	3.00	2.00	3.00	
8	H	3.00	3.00	3.00	
9	I	2.00	3.00	2.00	
10	J	3.00	3.00	3.00	
11					
12					
13					
14					
15					
16					

To calculate Cronbach's Alpha for the survey responses, click the **Analyze** tab, then click **Scale**, then click **Reliability Analysis**:





Next, click the **Statistics** button in the top right corner and then check the boxes under **Descriptives** for **Item**, **Scale** and **Scale if item deleted**:

Reliability Analysis: Statistics

Descriptives for

- Item
- Scale
- Scale if item deleted

Inter-Item

- Correlations
- Covariances

Summaries

- Means
- Variances
- Covariances
- Correlations

ANOVA Table

- None
- E test
- Friedman chi-square
- Cochran chi-square

Interrater Agreement: Fleiss' Kappa

- Display agreement on individual categories
- Ignore string cases
- String category labels are displayed in uppercase

Asymptotic significance level (%): 95

Missing

- Exclude both user-missing and system missing values
- User-missing values are treated as valid

Hotelling's T-square

Tukey's test of additivity

Intraclass correlation coefficient

Model: Two-Way Mixed

Type: Consistency

Confidence interval: 95 %

Test value: 0

Continue Cancel Help

Then click **Continue**. Then click **OK**.

## → Reliability

Scale: ALL VARIABLES

### Case Processing Summary

		N	%
Cases	Valid	10	100.0
	Excluded <sup>a</sup>	0	.0
	Total	10	100.0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
.773	3

### Item Statistics

	Mean	Std. Deviation	N
Q1	2.3000	.67495	10
Q2	2.2000	.91894	10
Q3	2.1000	.87560	10

### Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q1	4.3000	2.678	.513	.797
Q2	4.4000	1.822	.645	.659
Q3	4.5000	1.833	.703	.582

### Scale Statistics

Mean	Variance	Std. Deviation	N of Items
6.6000	4.267	2.06559	3

From the output we can see that Cronbach's Alpha is **0.773**.

The **Item Statistics** and **Item-Total Statistics** show various descriptive statistics for each individual question on the survey along with the value of Cronbach's Alpha if individual items were deleted from the survey.

The following table describes how to interpret different values of Cronbach's Alpha:

Cronbach's Alpha	Internal consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Since we calculated Cronbach's Alpha to be **0.773**, we would say that the internal consistency of this survey is "Acceptable."

**Bonus:** Feel free to use this to find Cronbach's Alpha for a given dataset.