

How can I calculate Cronbach's Alpha in Excel?

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Cronbach's Alpha is a statistical measure used to assess the reliability and internal consistency of a set of data. It is commonly used in research and survey studies to determine the consistency and accuracy of multiple items or questions that measure the same construct. To calculate Cronbach's Alpha in Excel, one can use the built-in function "ALPHA" or manually calculate it using the formula. This involves determining the average correlation between all the items and the standard deviation of the total scores. By following these steps, one can easily obtain the Cronbach's Alpha value in Excel, providing a useful tool for evaluating the reliability of their data.

Calculate Cronbach's Alpha in Excel

Cronbach's Alpha is a way to measure the reliability 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 following step-by-step example explains how to calculate Cronbach's Alpha in Excel.

Step 1: Enter the Data

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.

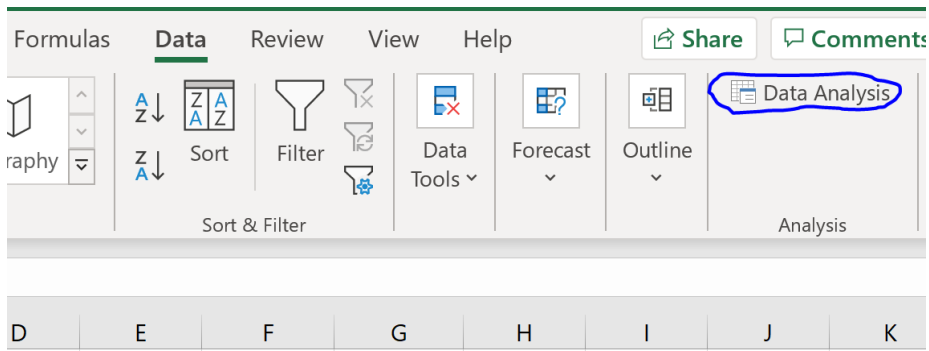
First, let's enter the data that contains the survey responses for each of the 10 customers:

	A	B	C	D	E	F	G
1	Respondent	Q1	Q2	Q3			
2	1	1	1	1			
3	2	2	1	1			
4	3	2	1	2			
5	4	3	2	1			
6	5	2	3	2			
7	6	2	3	3			
8	7	3	2	3			
9	8	3	3	3			
10	9	2	3	2			
11	10	3	3	3			
12							
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Step 2: Perform a Two-Factor ANOVA Without Replication

Next, we'll perform a two-way ANOVA without replication.

To do so, click the **Data** tab along the top ribbon and then click the **Data Analysis** option under the **Analysis** group:



If you don't see this option available, you need to first .

In the dropdown menu that appears, click Anova: Two-Factor Without Replication and then click OK. In the new window that appears, fill in the following information and then click OK:

	A	B	C	D	E	F	G	H
1	Respondent	Q1	Q2	Q3				
2	1	1	1	1				
3	2	2	1	1				
4	3	2	1	2				
5	4	3	2	1				
6	5	2	3	2				
7	6	2	3	3				
8	7	3	2	3				
9	8	3	3	3				
10	9	2	3	2				
11	10	3	3	3				
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Anova: Two-Factor Without Replication

Input
Input Range:

☐ Labels
Alpha:

Output options
☒ Output Range:
☐ New Worksheet Ply:
☐ New Workbook

The following results will appear:

E	F	G	H	I	J	K	L
	Anova: Two-Factor Without Replication						
	<i>SUMMARY</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
	Row 1	3	3	1	0		
	Row 2	3	4	1.333333	0.333333		
	Row 3	3	5	1.666667	0.333333		
	Row 4	3	6	2	1		
	Row 5	3	7	2.333333	0.333333		
	Row 6	3	8	2.666667	0.333333		
	Row 7	3	8	2.666667	0.333333		
	Row 8	3	9	3	0		
	Row 9	3	7	2.333333	0.333333		
	Row 10	3	9	3	0		
	Column 1	10	23	2.3	0.455556		
	Column 2	10	22	2.2	0.844444		
	Column 3	10	21	2.1	0.766667		
	ANOVA						
	<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
	Rows	12.8	9	1.422222	4.413793	0.003591	2.456281
	Columns	0.2	2	0.1	0.310345	0.737039	3.554557
	Error	5.8	18	0.322222			
	Total	18.8	29				

Step 3: Calculate Cronbach's Alpha

F	G	H	I	J	K	L
Anova: Two-Factor Without Replication						
<i>SUMMARY</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Row 1	3	3	1	0		
Row 2	3	4	1.333333	0.333333		
Row 3	3	5	1.666667	0.333333		
Row 4	3	6	2	1		
Row 5	3	7	2.333333	0.333333		
Row 6	3	8	2.666667	0.333333		
Row 7	3	8	2.666667	0.333333		
Row 8	3	9	3	0		
Row 9	3	7	2.333333	0.333333		
Row 10	3	9	3	0		
Column 1	10	23	2.3	0.455556		
Column 2	10	22	2.2	0.844444		
Column 3	10	21	2.1	0.766667		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	12.8	9	1.422222	4.413793	0.003591	2.456281
Columns	0.2	2	0.1	0.310345	0.737039	3.554557
Error	5.8	18	0.322222			
Total	18.8	29				
Cronbach's Alpha	0.773438	$=1-(124/122)$				

Cronbach's Alpha turns out to be 0.773.

The following table describes how different values of Cronbach's Alpha are usually interpreted:

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 automatically find Cronbach's Alpha for a given dataset.