Essential Skills for Measuring the User Experience

Tom Tullis
August 24, 2018
Better by Design Conference
How can you measure the user experience?
Web Analytics
Lab Usability Testing
Eye Tracking
Physiological Metrics
Maybe you should just ask your users.
But don't do it like this...

Official Presidential Job Performance Poll

1. How would you rate President Trump's job performance so far?
   - Great
   - Good
   - Okay
   - Other

2. (Optional) Please explain why you selected your response.

First Name

Last Name

Zip Code

Mobile Number (Optional)
Ask the questions after people have used the thing you're evaluating.

Ask LOTS of users.

Use standard questions.

Compare to benchmarks.
Three Standardized Tools We Will Look At:

- System Usability Scale (SUS)
- Net Promoter Score (NPS)
- User Experience Questionnaire (UEQ)
<table>
<thead>
<tr>
<th>Statement</th>
<th>1. Strongly Disagree</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5. Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think that I would like to use this system frequently.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I found the system unnecessarily complex.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I thought the system was easy to use.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I think that I would need the support of a technical person to be able to use this system.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I found the various functions in this system were well integrated.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I thought there was too much inconsistency in this system.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I would imagine that most people would learn to use this system very quickly.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I found the system very cumbersome / awkward to use.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I felt very confident using the system.</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
<tr>
<td>I needed to learn a lot of things before I could get going with this system</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>○</td>
</tr>
</tbody>
</table>

**System Usability Scale (SUS)**
SUS Rating Scales

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome/awkward to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.
System Usability Scale (SUS)

- Created by John Brooke (pictured) in 1986 while working at DEC in the UK.
- Made freely available for commercial or non-commercial use with attribution.
- Individual ratings are combined into an overall score (0-100).
- Has been used in 1,200+ published studies.
- Individual statements should not be modified (except to replace “system” as appropriate).
Frequency Distribution of SUS Scores in the Literature

Based on 129 conditions from 50 studies: Mean = 66, Median = 69
System Usability Scale (SUS) Resources
by Tom Tullis
Originally posted August 16, 2018

The System Usability Scale (SUS) is a ten-item rating scale for measuring perceived usability. It was created by John Brooke while he was working at Digital Equipment Corporation in 1986 in the U.K. Since then it has been used been in over 1,200 published studies measuring the usability of things as diverse as websites, mobile apps, desktop apps, various kinds of devices, interactive voice response systems, and many more.

Here are the 10 statements used in SUS:
1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I believe that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome/awkward to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

Respondents rate their level of agreement with each statement on a scale from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). Note that half the statements are positively worded and half are negatively worded.

Here are some SUS resources that you might find useful:
- Qualtrics version of SUS. (Here is a zip file containing the QSF file which you can save and then import into Qualtrics to create your own version.)
- Google Forms version of SUS. (Here is a link you can use to make your own copy of that form.)
- PDF of SUS for printing
- Excel spreadsheet for calculating SUS scores
- Google Sheets spreadsheet for calculating SUS scores which you can copy
- Excel spreadsheet containing data for 129 conditions from 50 studies in the literature

And here are links to some other articles and studies about SUS:
- Measuring Usability with the System Usability Scale (SUS) by Jeff Sauro
- 10 Things to Know About the System Usability Scale (SUS) by Jeff Sauro
- System Usability Scale (SUS) overview on Usability.gov

SUS Resources: MeasuringUX.com/sus/
## System Usability Scale (SUS)

### SUS Calculation

<table>
<thead>
<tr>
<th>Participant</th>
<th>q1</th>
<th>q2</th>
<th>q3</th>
<th>q4</th>
<th>q5</th>
<th>q6</th>
<th>q7</th>
<th>q8</th>
<th>q9</th>
<th>q10</th>
<th>SUS Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>p2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>p3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>p4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>75</td>
</tr>
<tr>
<td>p5</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>100</td>
</tr>
</tbody>
</table>

The SUS Score is calculated using the formula:

\[
SUS = 100 \times \frac{(4.5 + 2.5 \times (q_2 + q_6 + q_7 + q_8 + q_{10}) - (q_1 + q_3 + q_4 + q_5 + q_9))}{(5 \times 10)}
\]

### System Usability Scale (SUS) Template

Please rate your level of agreement with each of the following statements:

1. I think that I would like to use this program frequently.
2. I found the program 
   __________ easy to use.
3. I thought the program __________ complicated.
4. I was __________ sure how to use the program.
5. I found the various functions and actions in this program easy to do.
6. I found the system user 
   __________
7. I was __________ satisfied with this program.
8. I thought the various functions and actions in this program were __________.
9. I found the system user 
   __________
10. I thought the various functions and actions in this program were __________.
11. I would definitely recommend using the system.
12. I found the system user

### SUS Scoring

<table>
<thead>
<tr>
<th>Rating</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

### SUS Score Calculation

\[
SUS = 100 \times \frac{(4.5 + 2.5 \times (q_2 + q_6 + q_7 + q_8 + q_{10}) - (q_1 + q_3 + q_4 + q_5 + q_9))}{(5 \times 10)}
\]

Where q1 to q10 are the scores given by the participants.
Net Promoter® Score (NPS) Template

How likely is it that you would recommend this <thing> to a friend or colleague?

Not at all likely

Extremely likely

0 1 2 3 4 5 6 7 8 9 10
Net Promoter Score (NPS) Calculation

NPS = % Promoters - % Detractors
The One Number You Need to Grow, by Fred Reichheld, Dec 2003
Average NPS by Industry

Net Promoter Scores vary widely by industry, as you can see from the average scores for 23 industries. Knowing what similar companies have achieved helps you to set realistic goals for improvement, and realism is key to the long-term success of your program.
# NPS Leaders by Industry

Congratulations to the NPS leaders for each industry.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Leader</th>
<th>Leader’s NPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airlines</td>
<td>Jet Blue</td>
<td>74</td>
</tr>
<tr>
<td>Auto Insurance</td>
<td>USAA</td>
<td>73</td>
</tr>
<tr>
<td>Banking</td>
<td>USAA</td>
<td>75</td>
</tr>
<tr>
<td>Brokerage &amp; Investments</td>
<td>Vanguard</td>
<td>76</td>
</tr>
<tr>
<td>Cable &amp; Satellite TV</td>
<td>Verizon Fios</td>
<td>52</td>
</tr>
<tr>
<td>Cell Phone Service</td>
<td>Cricket</td>
<td>58</td>
</tr>
<tr>
<td>Credit Cards</td>
<td>American Express</td>
<td>60</td>
</tr>
<tr>
<td>Department &amp; Specialty Stores</td>
<td>Costco</td>
<td>78</td>
</tr>
<tr>
<td>Drug Stores &amp; Pharmacies</td>
<td>Walmart Pharmacies</td>
<td>73</td>
</tr>
<tr>
<td>Grocery &amp; Supermarkets</td>
<td>H-E-B</td>
<td>72</td>
</tr>
<tr>
<td>Health Insurance</td>
<td>Kaiser Permanente</td>
<td>78</td>
</tr>
<tr>
<td>Home &amp; Contents Insurance</td>
<td>USAA</td>
<td>78</td>
</tr>
<tr>
<td>Hotels</td>
<td>Ritz Carlton</td>
<td>78</td>
</tr>
<tr>
<td>Internet Service</td>
<td>Fios (a Verizon brand)</td>
<td>63</td>
</tr>
<tr>
<td>Laptop Computers</td>
<td>Apple</td>
<td>64</td>
</tr>
<tr>
<td>Life Insurance</td>
<td>Allstate</td>
<td>62</td>
</tr>
<tr>
<td>Online Entertainment</td>
<td>Netflix</td>
<td>62</td>
</tr>
<tr>
<td>Online Shopping</td>
<td>Nordstrom.com</td>
<td>64</td>
</tr>
<tr>
<td>Shipping Services</td>
<td>DHL</td>
<td>45</td>
</tr>
<tr>
<td>Smartphones</td>
<td>Apple</td>
<td>60</td>
</tr>
<tr>
<td>Software &amp; Apps</td>
<td>TurboTax</td>
<td>55</td>
</tr>
<tr>
<td>Tablet Computers</td>
<td>Amazon</td>
<td>58</td>
</tr>
<tr>
<td>Travel Websites</td>
<td>Airbnb</td>
<td>43</td>
</tr>
</tbody>
</table>
**NPS Calculation Trick**

**Classic formula for computing NPS**

Net Promoter Score (NPS) = % Promoters - % Detractors

**Smarter computation**

1. Recode
   - 0 to 6 scores as -100
   - 7 to 8 scores as 0
   - 9 to 10 scores as 100
2. Compute the average of the recoded scores (gives the same answer as the classic formula)
3. Use standard statistical software to compute statistical tests of differences in the “average” (i.e., the NPS)
<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>annoying</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>not understandable</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>creative</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>easy to learn</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>valuable</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>boring</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>not interesting</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>unpredictable</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>fast</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>inventive</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>obstructive</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>good</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>complicated</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>unlikely</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>usual</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>unpleasant</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>secure</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>motivating</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>meets expectations</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>inefficient</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>clear</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>impractical</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>organized</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>attractive</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>friendly</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>conservative</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
WHAT DOES IT MEASURE?

The scales of the questionnaire cover a comprehensive impression of user experience. Both classical usability aspects (efficiency, perspicuity, dependability) and user experience aspects (originality, stimulation) are measured.

---

**ATTRACTIONNESS**
Overall impression of the product. Do users like or dislike the product or service?

**PERSPICUITY**
Is it easy to get familiar with the product? Is it easy to learn how to use the product?

**EFFICIENCY**
Can users solve their tasks without unnecessary effort? Does it react fast?

**DEPENDABILITY**
Does the user feel in control of the interaction? Is it secure and predictable?

**STIMULATION**
Is it exciting and motivating to use the product? Is it mentally stimulating and fun to use?

**NOVELTY**
Is the design of the product innovative and creative? Does it catch the interest of users?
Sample UEQ Data for Two Prototypes
Data from Sample Study Compared to Benchmarks for Six UEQ Scales
AVAILABLE LANGUAGES

The questionnaire is currently translated into 20 languages.

- German
- English
- Spanish
- Portuguese
- Chinese
- French
- Indonesian
- Turkish
- Italian
- Japanese
- Dutch
- Russian
- Estonian
- Slovenian
- Swedish
- Polish
- Greek
- Persian
- Bulgarian
- Czech

Authors:
- Manuel Pérez Cota, Jörg Thomaschewski
- Alain Tuor
- Harry B. Santoso
- Barış Sınıf
- Mauro Zenoni
- Adriaan Dekker
- Jana Kadašíková
- Matjaž Debevec, Saša Jazbec, Julia Lapu Bele
- Justyna Gerłożewska, Katarzyna Grabowska-Aleksandrowicz, Urszula Skrobak, Konrad Rejdak
- Arefeh Heshmati, Peyman Rezaei-Hachesu, Taha Samad-Soltani
- Assen Tzekin
- Martin Valenta
Download User Experience Questionnaire (UEQ)

The User Experience Questionnaire (UEQ) for the most application scenarios.

User Experience Questionnaire Handbook

All you need to know to apply the UEQ successfully in your projects.

Author: Dr. Martin Schnapp
13.09.2017

The knowledge required to apply the User Experience Questionnaire (UEQ) is currently split into several independent publications. The goal of this handbook is to bring all these pieces of knowledge together into one document. This will make it easier for practitioners to apply the UEQ in their evaluation projects.

The handbook describes the most important facts concerning the usage of the UEQ.

Download the questionnaire (paper version) in all language versions.

Download Handbook

Download UEQ

Two sample T-Test assuming unequal variances

Simply enter your data into the Excel Sheet. All statistics necessary to interpret the results are calculated automatically.

Download Analysis Tool

UEQ Resources: https://www.ueq-online.org/
Comparison

**System Usability Scale:**
- Good for measuring perceived learnability and usability.
- Lots of research on it.

**Net Promoter Score:**
- Senior managers and marketing love it.
- Very simple.

**User Experience Questionnaire**
- Perhaps the broadest measure of the user experience.
- The six measures make it more diagnostic.