6/30/2025

Reflective Memorandum – Usability Test Plan, Test, & Report

The University of New Mexico
Class: ENGL-512-001
Instructor: Dr. Julianne Newmark

By: Krista Rundiks

Overview:

The usability test I conducted aligns closely with the principles of **user-centered design (UCD)**, which emphasize involving users throughout the entire lifecycle of a product, from conception to implementation (Rubin & Chisnell, 2008). As Getto et al. (2022) explain, UCD is a methodology grounded in **understanding user needs, behaviors, and contexts to inform design decisions**. Barnum (2011) reinforces this by noting that when usability is well-integrated, it becomes invisible, yet essential to user satisfaction. The ISO (2013) definition of usability further supports this perspective, describing it to the extent to which a system can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in each context.

Theoretical Justification:

The usability test I conducted aligns closely with the principles of user-centered design (UCD), which emphasize **designing with and for the user** throughout the development process (Getto et al., 2022). As Barnum (2011) outlines in her UCD toolkit, usability testing is not just a post-development activity but a continuous feedback loop that informs design decisions. My decision to test Google Sheets with participants of varying experience levels reflects this philosophy, ensuring that the tool's usability was evaluated in realistic, task-based scenarios. The think-aloud protocol and minimal intervention approach I used were grounded in Rubin, Chisnell, and Spool's (2008) recommendations for **authentic user behavior observation**, allowing me to capture both task success and areas where users experienced hesitation or confusion.

This project also reinforced the relationship between **usability and technical communication**, as discussed by Redish and Barnum (2011). Their article on the convergence of UX and Technical and Professional Communication (TPC) highlights how technical communicators are uniquely positioned to bridge the gap between users and digital interfaces. My role as a moderator, observer, and report writer required me to synthesize user feedback into actionable insights, which is an essential skill in TPC. This experience helped me better understand how usability testing supports not only product improvement but also clearer, more effective communication between users, stakeholders, and developers.

The structure of my usability report, modeled after the framework presented by Spool, Chisnell, and Rubin (2008, Chapter 12) and supported by Barnum's (2011, Chapter 9) guidance, demonstrates how technical communicators can translate complex user data into clear, **persuasive recommendations for stakeholders**. By organizing the report into sections such as Executive Summary, Method, Results, General Findings, and both Short- and Long-Term Recommendations, I was able to present findings in a way that was both accessible and actionable. Barnum's emphasis on clarity, audience awareness, and iterative refinement (Barnum, 2011) helped guide the tone and structure of the report. This process not only improved my analytical skills but also deepened my understanding of **how communication shapes user experience**.

Finally, the course readings and discussions helped me see **usability testing as a collaborative, cyclical process** rather than a one-time evaluation. Gawande's (2010) emphasis on checklists and communication in high-stakes environments parallels the importance of structured, repeatable methods in usability work. Similarly, Norman's (2013) critique of the term "human error" reminded me that design flaws often stem from system-level oversights rather than user failings. These insights shaped how I interpreted participant struggles, not as individual shortcomings, but as opportunities to improve the interface. Through this project, I have come to appreciate **usability testing as both a technical and user-focused practice**, one that centers the user's voice and experience in every stage of design.

Assembling the Testing Group:

To assemble a testing group that was both diverse and focused, I selected **three participants** with varying levels of spreadsheet experience and different professional responsibilities. The group included two females and one male, with ages ranging from 25 to 45. All participants were familiar with Excel, the competing software, though only two had regular access to Microsoft products. Two out of three participants had prior experience with Google Sheets, while one was using it for the first time. This range allowed for **a well-rounded assessment** of how users with different backgrounds, familiarity levels, and job functions approach common spreadsheet tasks in Google Sheets.

Running the Test:

The usability test was conducted through three remote sessions, two on Microsoft Teams and one on Zoom, all recorded for analysis. Each session lasted no more than 30 minutes and began with obtaining consent, clarifying participant backgrounds, and explaining the test purpose. I provided a **test scenario** and asked participants to **think aloud** as they completed four tasks in Google Sheets. Rather than guiding them through the tasks, I moderated each task one by one as participants worked independently. I observed their interactions, noting any difficulties or help-seeking behavior. Sessions ended with a short **debrief** where participants shared overall impressions and feedback.

Reflections on Running the Test:

All participants were eager to help, showed up on time, and performed the think-aloud tasks well with minimal prompting. One challenge was that a participant without a Gmail account required a test account to access Google Sheets. The audio was low during the first participant's Zoom session, so I adjusted my computer's sound settings to improve it. A few times when participants encountered issues, such as searching for help inside or outside the program or using SUM on a filtered dataset, I wasn't always sure **how much guidance to provide** since I aimed to keep my intervention minimal. Overall, I improved my moderation skills with each test session.

Composing the Usability Test Report:

The report was structured following **Chapter 12, Report Findings and Recommendations**, from Rubin, Chisnell, and Spool. It includes an Executive Summary of the study purpose, key findings, and recommendations; a Method section describing the testing approach and participants; and a Results section with quantitative and qualitative data. The report also covers General Findings, a bullet Overview of Test Findings, and separates recommendations into Short-Term and Long-Term actions. It identifies Areas for Further Research and includes Supporting Material such as unedited user test videos and cleaned-up user test transcriptions. A short highlights presentation was also prepared to share key insights with stakeholders.

Reflections on the Process:

Analyzing the usability test results revealed both **logistical challenges and valuable user insights**. A key limitation was the inconsistent use of Microsoft Teams, which would have provided built-in transcription and simplified the review process for all user tests. My limited familiarity with Zoom and lack of a transcription plugin meant I had to find third-party tools afterward.

Additionally, when one participant lacked a Google account, I had to assist her off-record using a tester login, shortening her recorded session. Interestingly, she became more open once the recording ended, suggesting she may have felt judged despite reassurances. Reflecting on the process, I found **writing the test plan and moderating sessions easier** than analyzing the data and developing recommendations for the final report.

The diversity of participants also revealed improvements needed in my test design. The more novice spreadsheet user with strong Google familiarity **provided the most actionable feedback**. Another test participant provided insights that prompted updates to my test plan's task benchmarks. In summary this reflection helped me to realize the **importance of flexibility, empathy, and iterative refinement**. In hindsight, I would have also refined my test script to include consistent closing questions for every participant.

Conclusion:

This course has **strengthened my understanding of user-centered design** as both a mindset and a practical approach that **puts real user needs at the center of the design process**. Through usability planning and testing, along with structured reporting and feedback, I've learned to apply UCD principles in clear and measurable ways. Whether creating instructional materials or evaluating digital tools, I've come to value the role of UCD tools in assessing usability. Moving forward, I'll continue applying the strategies and insights from this course to **advocate for users** and enhance the effectiveness of the content I create and help evaluate.

References:

Barnum, C. M. (2011). *Usability testing essentials: Ready, set… test!*. Morgan Kaufmann. Available from O'Reilly Online Learning.

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Getto, G., Potts, L., Moore, T., & Li, M. (2022, May). *Emerging UX skill sets: Preliminary findings from a textual analysis of job ads* [Class PDF]. Canvas.

International Organization for Standardization. (2013). *ISO/TS 20282-2:2013 – Usability of consumer products and products for public use: Part 2: Summative test method*. https://www.iso.org/standard/62733.html

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Google Sheets Usability Test Plan and Report

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Google Sheets Usability Test Plan

Background

Google Sheets is a widely used web-based spreadsheet application that enables individuals and teams to create, edit, and share data collaboratively in real-time. Commonly used across industries, it offers a range of tools for organizing, analyzing, and visualizing data. As an alternative to traditional spreadsheet software, Google Sheets continues to evolve with features aimed at both novice and advanced users.

Goal

The **goal of this usability test is to assess how effectively Google Sheets supports users** with **varying experience levels** in **completing a common data analysis task** relevant to a sales and marketing professional. The test is designed to **evaluate the product's usability** in a real-world business scenario by identifying pain points, assessing helpfulness of documentation, and exploring how users navigate the interface to accomplish tasks.

Objectives

Objective 1

- **Assess** how effectively Google Sheets supports users in completing common business data analysis tasks.

Objective 2

- **Compare** performance and experience between novice and experienced users, focusing on task success and ease of learning.

Objective 3

- **Identify** usability issues and **evaluate** the extent to which users can resolve interface or functionality challenges independently, without relying on built-in or external help resources.

Research Questions

1. Comprehension & Familiarity
    - How easy is it for users to log in, open a shared spreadsheet, understand the dataset layout, and use basic software features to complete the task?

2. Task Analysis

- How easily and accurately can users filter the data to include only U.S. and Canadian manufacturers and calculate total web sales for that filtered data using the Google Sheets interface?

3. Visualization and Reporting

- How effectively can users identify the top 5 manufacturers by purchase amount and highlight them within the spreadsheet?

4. Support & Resourcefulness

- When do users look for help (like Google, YouTube, or built-in guides), how easy is it for them to find this help, and does it help them finish the task?

Participant Characteristics

Characteristic	User 1	User 2	User 3
Age	25	35	Late 40's
Gender	Male	Female	Female
Education	Bachelor's Degree	Bachelor's Degree	No formal college education. Work and Military Experience.
Job Role	Business Relationship Manager / Banking	Business Success Manager / Distribution	Product Manager / Distribution
Experience in Sales, Marketing, or Web	Entry level associate. 2 years of experience.	Mid-level associate. 6 years of experience.	Senior level product manager. 10 years of experience.
Experience working with Excel	Moderate	Experienced	Experienced
Experience working with Google Sheets	Some	Moderate	None
Experience with Data Analysis / Manipulation	Some	Experienced	Intermediate-Expert

Methodology

This usability study follows a **moderated, task-based** testing approach to evaluate participants' ability to work with basic sales data in Google Sheets. The study simulates a **real-world task** that an entry-level sales and marketing professional in a business setting would be expected to perform. During testing, participants will be **observed** and encouraged to **think aloud** to provide insight into their experience, challenges, and use of help resources while completing the tasks.

Test Format

- **Type:** Remote, moderated usability test
- **Tool:** Google Sheets
- **Duration:** Between 15-30 minutes per session
- **Recording:** Screen and Audio (with participant consent)

Participants

Three participants with varying levels of experience in business banking, business management, and product management along with varied levels of experience with spreadsheet tools were selected **to reflect a realistic cross-section of potential users**:

Participant Role	Experience with Excel	Experience with Google Sheets	Experience with Data Analysis
Entry-level business professional	Some familiarity	Some experience	Some experience
Business success manager	Experienced	Moderate experience	Extensive experience
Product manager	Extensive experience	No experience	Intermediate to expert level

Introduction to the Session (5 minutes)

- Obtain permission from the tester to record the usability session.
- Obtain clarification on participants' background through a set of general questions.
- Briefly explain the purpose of the usability test and reassure participants that it's the product being tested, not their skills.
- Provide the tester with instructions on how I will moderate the usability test, letting them know I will be asking them to perform 4 tasks, one at a time.

Tasks (10-15 minutes)

- Participants complete predefined tasks involving filtering data, calculating sales, and creating a labeled visualization in Google Sheets.
- Observe participant interactions and note any difficulties, errors, or points where they seek help or hesitate.

Post-Task Debriefing (5 minutes)

- Ask open-ended questions to gather participants' overall impressions, positive thoughts, frustrations, and suggestions.
- Ask what they thought of any external or in-software help resources if used and how the software's help features could be improved.

Scenario

You are a sales and marketing professional at a mid-sized business. A manager has asked you to create a summary report highlighting key manufacturer sales figures for the U.S. and Canada to support marketing strategy decisions.

Task Component Breakdown

Using Google Sheets to perform the following:

TASK 1	DESCRIPTION
Task	Navigate to Google Sheets, log in with your Gmail credentials, and open the shared spreadsheet titled "User Test."
State	Participant starts at a browser homepage or blank tab, not yet signed in or on Google Sheets.
Successful Completion Criteria	Participant successfully signs into Google using their Gmail credentials and opens the correct shared file from Google Sheets.
Benchmark	Participant accesses the correct spreadsheet without assistance by visiting https://workspace.google.com/products/sheets/ and finding it on the primary dashboard or by clicking on the shared link in their email.

TASK 2	DESCRIPTION
Task	Filter the dataset to include only manufacturers from the U.S. and Canada.
State	Google Sheets file containing manufacturer sales data from multiple countries and months.

Successful Completion Criteria	Participant applies a filter that displays only data where the country is the U.S. or Canada.
Benchmark	Participant completes the filter correctly without assistance or errors, selecting the correct country values.

TASK 3	DESCRIPTION
Task	Calculate the total purchase amounts for all filtered manufacturers and put the number in a blank cell.
State	Filtered dataset showing only manufacturers from the U.S. and Canada with multiple months of web sales data.
Successful Completion Criteria	Participant correctly calculates the total purchase amount for manufacturers in the U.S. and Canada by either using a formula (e.g., =SUBTOTAL(9,H2:H31)), (=SUM(H2,H4,H5,H6,H8,H11,H12,H13,H15,H20,H21,H23,H24,H26,H30,H31), by copying the filtered purchase amount data into another row and using the =SUM(A1:Z5), or by manually selecting all the values and entering the total into a blank cell.
Benchmark	Participant calculates the total accurately (being $1,825.04) and efficiently without errors or outside assistance.

TASK 4	DESCRIPTION
Task	Identify the top 5 manufacturers by purchase amount for the U.S. and Canada and highlight these cells with a light green background color.
State	Filtered dataset with U.S. and Canadian manufacturers and their monthly purchase amount figures.
Successful Completion Criteria	Participant uses the built-in sort functionality to sort web sales in descending order and correctly identifies the top 5 manufacturers by purchase amount, highlighting those cells in light green.

Benchmark	Participant correctly applies the sort using the Google Sheets interface and accurately identifies the top 5 and highlights these cells with a light green background color, without errors or assistance.

Test Environment, Equipment, and Logistics

The usability test will be conducted in a quiet, controlled environment simulating a typical business office setting, such as a shared workspace or remote home office. The test environment is designed to reflect the everyday conditions under which marketing or sales professionals would perform data analysis tasks.

Environment

- Quiet space with minimal distractions
- Comfortable desk setup and seating
- Simulated office scenario with participants assuming the role of sales or marketing team members tasked with creating internal reports

Equipment

- Laptop or desktop computer with a standard screen size (13"–15")
- Internet access
- Access to Microsoft Teams or Zoom for remote meeting session
- Computer microphone (external or internal) to communicate
- Sufficient audio level to hear moderator/participant
- Google account with access to Google Sheets
- Pre-loaded Google Sheets file containing the sample dataset
- Notepad software for taking facilitator notes
- Audio Transcription Software

Logistics

- Each session will be moderated and scheduled for up to 30 minutes
- Screen recording (with participant consent) will be used to capture task execution for analysis
- No prior training on Google Sheets will be provided; the test is intended to assess participants' ability to navigate and use the software independently to solve a realistic business task

Moderator / Observer Role

The moderator will:

- Provide a brief introduction to the session
- Observe participants' actions throughout the test
- Remain available for clarification if participants encounter confusion, but will avoid giving direct instructions unless it is necessary to continue the session

Data Collection

This usability test will gather both quantitative and qualitative data to get a full picture of how users perform and feel during the tasks.

Quantitative Data

The moderator will record:

- **Task completion rates and accuracy:** Whether participants finish the tasks correctly.
- **Time on task:** How long it takes participants to complete each task.
- **Errors or difficulties:** Any mistakes or problems participants encounter.

Qualitative Data

The moderator will record:

- **Verbal feedback or think-aloud comments:** What participants say while doing the tasks, showing their thoughts and feelings.
- **Use of external resources:** When and what kinds of help (like Google searches, YouTube videos, or help menus) participants use to solve problems.

Report Contents

The final usability test report will include the following sections:

- **Executive Summary**
  A concise overview of the study purpose, key findings, and recommendations.
- **Method**
  Description of the testing methodology, participant details, and data collection process.
- **Results**
  Description of quantitative and qualitative data gathered during testing.

- **General Findings**
  Summary description of major usability issues and user behavior observed.
- **Overview of Test Findings**
  Bulleted list of usability issues.
- **Short Term Recommendations**
  Actionable fixes that can be implemented quickly to improve usability.
- **Long Term Recommendations**
  Strategic suggestions for future improvements and product development.
- **Areas of Further Research Required**
  Identification of questions or issues that need additional study.
- **Supporting Material for Reviewers**
  Appendices, raw data, transcripts, or recordings relevant to the test.
- **Highlights Presentation**
  A summary slide deck or visual presentation of key findings for stakeholders.

Google Sheets Usability Test Report

Executive Summary

This usability study **evaluated how effectively Google Sheets supports users** in completing common business data analysis tasks. Three **participants with varying spreadsheet experience** were observed performing tasks such as filtering data, calculating totals, and highlighting key insights. While all users completed the tasks, the study revealed **usability challenges related to filtering, formula use, and interface navigation**, particularly for those more familiar with Excel. Key recommendations include improving the visibility of core features, simplifying multi-step actions, and enhancing in-app guidance to reduce reliance on external help.

Method

This usability study followed a **moderated, task-based testing** approach to evaluate how effectively users with varying levels of spreadsheet experience could complete common business data analysis tasks using Google Sheets. The test **simulated a real-world scenario** in which participants acted as sales or marketing professionals tasked with analyzing manufacturer sales data for the U.S. and Canada.

Participants / Users

Three individuals participated in the study, representing a range of professional roles and spreadsheet experience:

Participant / User 1

Entry-level business banking professional with moderate Excel experience and some familiarity with Google Sheets.

Participant / User 2

Mid-level business success manager with extensive Excel experience and moderate Google Sheets experience.

Participant / User 3

Senior product manager with expert-level Excel skills and no prior experience with Google Sheets.

Average Session Duration

Each session lasted **an average of 17 minutes** and was conducted **remotely** via Zoom or Microsoft Teams. Participants were asked to **think aloud** while completing four predefined tasks: opening a shared spreadsheet, filtering data by country, calculating total purchase amounts, and highlighting top manufacturers.

Participant	Platform	Duration	Device
1	Zoom	21 minutes	Laptop
2	MS Teams	15 minutes	Laptop
3	MS Teams	15 minutes	Laptop

Data Collection

Summary

Both **quantitative and qualitative** data were collected during the sessions. Quantitative data included task completion rates, time on task, and observed errors. Qualitative data included participants' verbal feedback, behavioral observations, and use of external help resources such as Google searches or YouTube tutorials. All sessions were recorded (with consent) for later analysis.

Results

The usability test generated a mix of quantitative and qualitative data that provided insight into how users interacted with Google Sheets during common business tasks.

Quantitative Data

Measure	Summary
Task Completion	All three participants successfully completed the four assigned tasks: opening the spreadsheet, filtering data by country, calculating total purchase amounts, and highlighting the top five manufacturers.
Assistance Required	A participant required external help (Google or YouTube) to complete at least two tasks, particularly filtering and formula use.
Errors Observed	All three participants misused the SUM function on filtered data. One participant struggled to locate the filter tool and applied it incorrectly before correcting the action.
Time on Task	While exact times varied, tasks involving filtering and formula use consistently took longer than opening the spreadsheet or applying highlights.

Qualitative Data

Measure	Summary
User Feedback	Participants described Google Sheets as clean and user-friendly but noted some features were difficult to locate or behaved differently than expected, especially compared to Excel.
Common Pain Points	Filtering data was unintuitive and overly complex. The SUM function did not behave as expected on filtered data, causing confusion. Conditional formatting required trial and error for unfamiliar users.
External Resource Use	One participant turned to external resources to complete tasks, indicating a lack of discoverability or in-app guidance for key features.
Positive Observations	Participants appreciated the simplified layout and integration with other Google tools. Once familiarized, they found the interface efficient for basic tasks.

Findings

General Findings

The usability test identified **key challenges** in Google Sheets related to **filtering data and using formulas with filtered views**. Participants often found the filtering process unintuitive and were surprised that the SUM function included hidden rows, leading to confusion and workarounds.

Users with less experience in Google Sheets frequently **relied on external help**, highlighting a need for better in-app guidance. Despite these issues, all participants completed the tasks and appreciated the clean interface and integration with other Google tools.

Overview of Test Findings

Finding	Observation
Filtering Process	Users found filtering unintuitive, especially when selecting multiple values like "U.S." and "Canada."
SUM Function	Included hidden rows in filtered views, causing confusion and inaccurate results.
Excel Expectations	Participants expected similar behavior to Excel and struggled with interface differences.
Feature Discoverability	Key features like formulas and filters were difficult to locate, leading to delays and errors.
External Help	One participant relied on external resources (e.g., Google, YouTube) to complete tasks.
Conditional Formatting	Required trial and error, particularly for users unfamiliar with Google Sheets.
Formula Discoverability	Users wanted a dedicated formula tab or toolbar to improve discoverability.
In-App Guidance	Lack of in-app guidance made it harder for less experienced users to complete tasks independently.

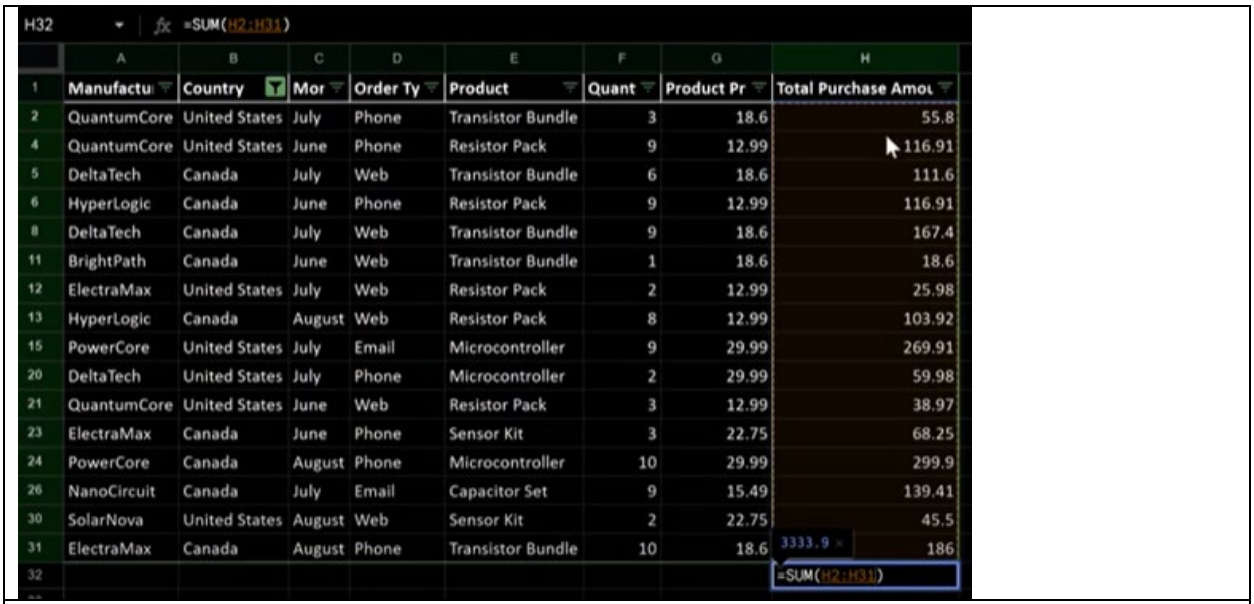
SUM Function Inaccuracy Examples

Participant 1 Screen Shot

	A	B	C	D	E	F	G	H	I
1	Manufacturer	Country	Month	Order Type	Product	Quantity	Product Price	Total Purchase Amount	
2	QuantumCore	United States	July	Phone	Transistor Bundl	3	18.6	55.8	
4	QuantumCore	United States	June	Phone	Resistor Pack	9	12.99	116.91	
5	DeltaTech	Canada	July	Web	Transistor Bundl	6	18.6	111.6	
6	HyperLogic	Canada	June	Phone	Resistor Pack	9	12.99	116.91	
8	DeltaTech	Canada	July	Web	Transistor Bundl	9	18.6	167.4	
11	BrightPath	Canada	June	Web	Transistor Bundl	1	18.6	18.6	
12	ElectraMax	United States	July	Web	Resistor Pack	2	12.99	25.98	
13	HyperLogic	Canada	August	Web	Resistor Pack	8	12.99	103.92	
15	PowerCore	United States	July	Email	Microcontroller	9	29.99	269.91	
20	DeltaTech	United States	July	Phone	Microcontroller	2	29.99	59.98	
21	QuantumCore	United States	June	Web	Resistor Pack	3	12.99	38.97	
23	ElectraMax	Canada	June	Phone	Sensor Kit	3	22.75	68.25	
24	PowerCore	Canada	August	Phone	Microcontroller	10	29.99	299.9	
26	NanoCircuit	Canada	July	Email	Capacitor Set	9	15.49	139.41	
30	SolarNova	United States	August	Web	Sensor Kit	2	22.75	45.5	
31	ElectraMax	Canada	August	Phone	Transistor Bundl	10	18.6	186	
32								=SUM(H2:H31)	
33								Tab SUM(H2:H31) 3333.9	
34									

The correct SUM of the filtered cells should be $1,825.04

Participant 2 Screen Shot



H32 =SUM(H2:H31)

	A	B	C	D	E	F	G	H
1	Manufactu	Country	Mor	Order Ty	Product	Quant	Product Pr	Total Purchase Amou
2	QuantumCore	United States	July	Phone	Transistor Bundle	3	18.6	55.8
4	QuantumCore	United States	June	Phone	Resistor Pack	9	12.99	116.91
5	DeltaTech	Canada	July	Web	Transistor Bundle	6	18.6	111.6
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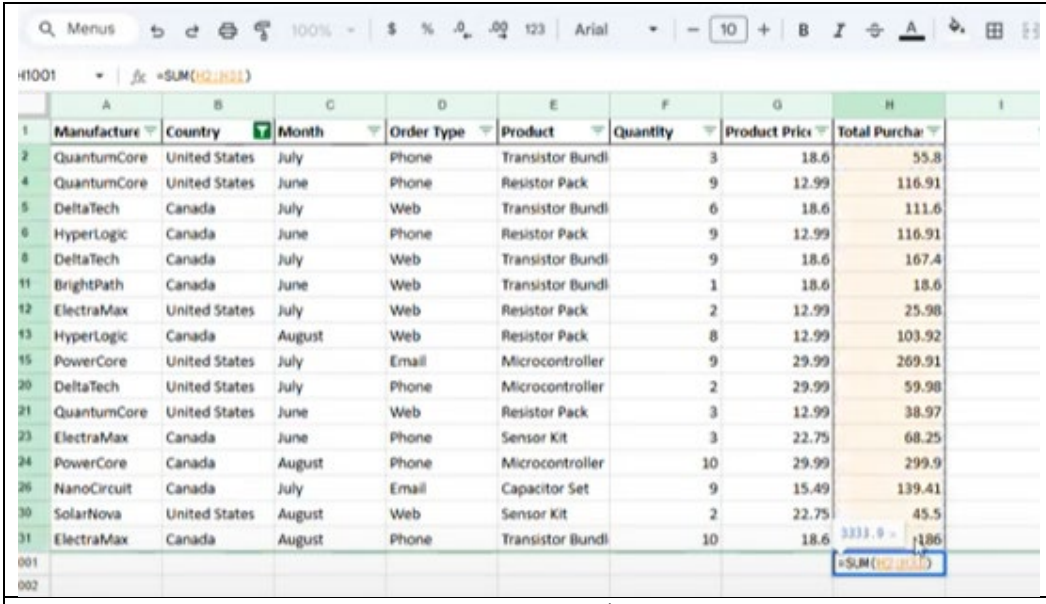
32								=SUM(H2:H31)

The correct SUM of the filtered cells should be $1,825.04

Participant 3 Screen Shot



	A	B	C	D	E	F	G	H	I
1	Manufacture	Country	Month	Order Type	Product	Quantity	Product Price	Total Purcha	
2	QuantumCore	United States	July	Phone	Transistor Bundl	3	18.6	55.8	
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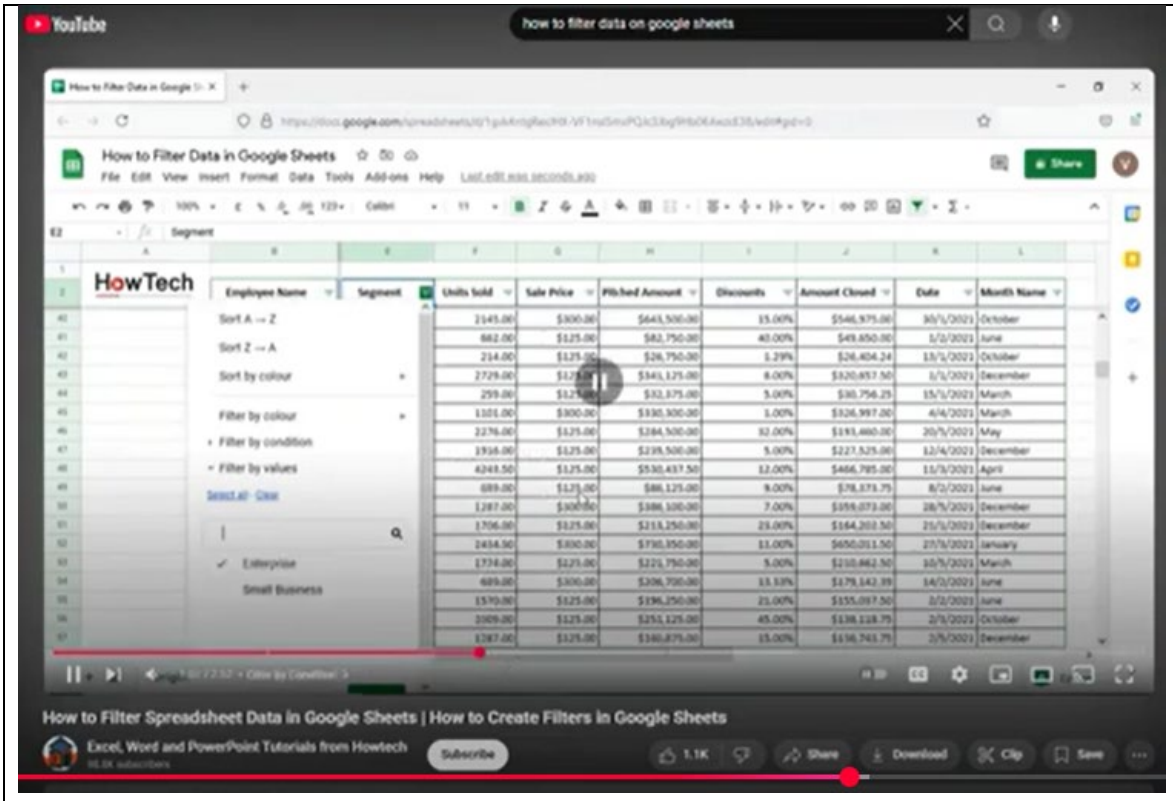
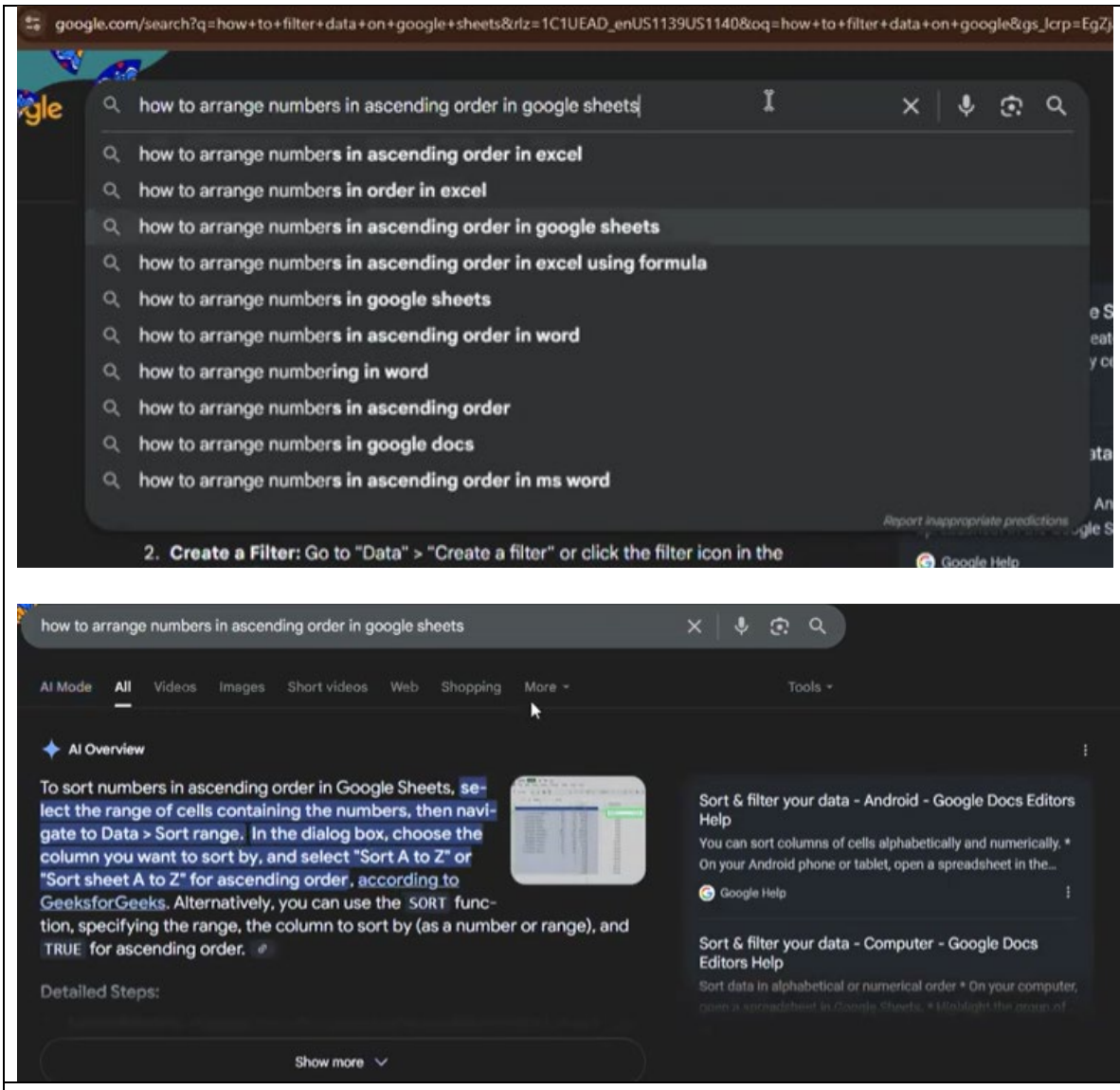
External Help Examples

Participant 1 Screen Shots





Participant Googles how to filter data and watches a YouTube video. Another instance he Googles how to arrange numbers in ascending order in Google Sheets and uses the AI Overview.

Recommendations

Short-Term Recommendations

Recommendation	Description
Simplify Filtering Interface	Make multi-select options more visible and intuitive.

Improve SUM Function	Adjust behavior or provide clearer guidance when used with filtered data to prevent inaccurate totals.
Add Tooltips	Include hover hints for key features like filters, formulas, and conditional formatting to support new users.
Quick-Access Formula Button	Introduce a button or tab to help users quickly locate common functions like SUM.
Enhance Onboarding	Improve prompts or in-app tutorials for first-time users to reduce reliance on external help.
Standardize Icons	Align icon design and placement with user expectations from other tools like Excel.

Long-Term Recommendations

Recommendation	Description
Redesign Filtering Workflow	Make filtering more intuitive with guided steps or visual cues for multi-criteria filtering.
Context-Aware Formula Assistant	Suggest functions based on user actions or selected data ranges.
Beginner-Friendly Mode	Provide onboarding experience tailored to users transitioning from Excel or new to spreadsheets.
Enhanced In-App Help	Include embedded video tutorials, interactive walkthroughs, or AI-powered support.
Improve Formula Consistency	Align SUM and similar functions with user expectations in filtered views.
Customizable Toolbars	Allow users to pin frequently used tools and functions in quick-access panels.
Ongoing User Research	Continuously refine interface design and feature discoverability through testing with diverse user groups.

Areas of Further Research Suggested

Research Area	Description
Redesigned Features Impact	Study how new features like better filters, smarter formula help, and customizable toolbars affect user efficiency and satisfaction.
Onboarding and In-App Guidance	Look at how onboarding and in-app tips help new users rely less on outside help.
Accessibility and Device Comparison	Examine needs of users with accessibility requirements and compare performance on desktop vs. mobile.

Appendices: Supporting Information

Appendix A: User Test Introduction and Questions Script

Hi [Name], thank you for participating in today's usability session.

Before we begin, do I have your permission to record this session for internal use only? The recording will be used solely for evaluating the usability of the software and will not be shared outside our team.

I'd like to ask you a few quick questions to better understand your background with data analysis and spreadsheet tools.

1. What is your current profession or role, and how long have you been working in that position or field?
2. How often do you use spreadsheets in your work or studies, and what do you usually use them for?
3. Have you used Microsoft Excel or Google Sheets before?
4. How would you describe your current familiarity with Google Sheets?
5. Have you used other Google products (e.g., Docs, Slides, Forms, Gmail)? If so, which ones and how often?

Appendix B: Scenario and Expectations Script

Next, I'll read you a short scenario followed by a set of tasks to complete in Google Sheets.

Please note, there are **no right or wrong answers, actions, or approaches**. This session is not a test of your skills, it's about understanding how different users interact with the software and identifying areas where we can improve usability.

Throughout the session, I encourage you to **think aloud** as you work through the tasks. This helps us gain a better understanding of your thought process and overall experience.

Appendix C: Participant Test Audio Transcripts

Usability Test Summary: Kailer Clements (User 1)

Date: June 19, 2025
Time: 7:00 PM (MDT)
Format: Zoom Meeting Recording

Central Themes

Central Theme	Description & Quotes
Low Familiarity with Google Sheets	Kailer rated his comfort level as very low despite being a regular user of other Google tools. *"I use Gmail and Docs all the time, but Google Sheets? Maybe once or twice ever."*
Excel-Based Expectations	His experience with Excel influenced how he approached tasks, expecting similar functionality and layout. *"In Excel, I know exactly where to go. Here, I had to stop and look things up."*
Learning Through External Resources	Kailer relied on YouTube and Google searches to complete tasks, indicating a need for more in-app guidance. *"I had to Google how to filter by two countries—it wasn't obvious at all."*
Desire for Simplified Navigation	He expressed a strong preference for more intuitive, streamlined features, especially around formulas and filtering. *"There should be a formula tab or something. I spent way too long just trying to find SUM." "Filtering felt like a multi-step puzzle. It should be easier."*

Other Participant Quotes

Theme	Quotes
Interface Confusion	*"I kept clicking around thinking, 'Where is the filter option?' It wasn't where I expected it to be."*
Needing Help	*"I didn't want to guess and mess something up, so I just looked up a tutorial."*
Conditional Formatting	*"I knew what I wanted to do—highlight the top ones—but I wasn't sure how to tell Sheets to do it."*
Compared to Excel	*"In Excel, I can do this in two clicks. Here, it felt like five."*

Overall Experience	*"It's not bad once you figure it out, but getting there takes time if you're not used to it."*

Task-by-Task Summary

1. Open the Spreadsheet

- **Outcome:** Completed.
- **Challenges:** None reported.
- **Feedback:** Kailer was able to access the file without issue, likely due to familiarity with Google Drive and Docs.

2. Filter Data by Country (United States and Canada)

- **Outcome:** Completed with assistance.
- **Challenges:** Found the filtering interface unintuitive and was unsure how to apply multiple filters.
- **Feedback:** Suggested simplifying the filtering process and making it more visually guided.

3. Calculate Purchase Totals

- **Outcome:** Completed successfully.
- **Challenges:** Difficulty locating and using the SUM formula.
- **Feedback:** Recommended a dedicated formula tab or toolbar to make common functions easier to find and use.

4. Highlight Top Manufacturers

- **Outcome:** Completed with trial and error.
- **Challenges:** Uncertainty around how to apply conditional formatting.
- **Feedback:** Suggested clearer labeling or guided steps for highlighting data based on conditions.

Closing Thoughts

Kailer appreciated the clean interface and integration with other Google tools but found Google Sheets less intuitive than Excel.

Category	Description
Formula Tab	Add a Formula Tab for easier access to common functions.
Filtering System	Improve the Filtering System to reduce complexity and steps.

Process Streamlining	Streamline Multi-Step Processes to minimize the need for external help.
SUM Formula Behavior	Review SUM Formula Behavior for consistency and ease of use.

Usability Test Summary: Adriana Posada (User 2)

Date: June 23, 2025
Time: 12:00 PM (MDT)
Format: MS Teams Recording

Opening Thoughts

Category	Details
Role	Business Support Specialist
Experience	Uses spreadsheets daily for data manipulation, confirmations, and bulk uploads
Tools Used	Mostly Excel: some experience with Google Sheets, Gmail, Forms, and Calendar
Confidence	Proficient, but less up to date with Google Sheets due to infrequent use

Central Themes

Central Theme	Description & Quotes
Familiarity vs. Frequency	The user is proficient in both Excel and Google Sheets but uses Excel more frequently, affecting recall and ease of use. *"With Google Sheets I don't use as often as I use as I do Microsoft Excel, so I'd say I am pretty good at it, pretty proficient at it, but obviously because I don't use it as often, it's probably gonna be a little less current—the information in my head basically."* — Adriana Posada
Usability Strengths	Google Sheets is described as user-friendly, with a clean and intuitive interface. *"It is pretty self-explanatory. The controls are right on the top here, so that is one of the great things about Google Sheets — you have a simplified menu on the top with all your most important functions and there's not a lot going on, so it's easy to find even if you're not used to using it. It's fairly easy, fairly user-friendly."* — Adriana Posada
Pain Points	A key issue was the behavior of the SUM function with filtered data, which differs from Excel and caused confusion. *"Even though the rows were filtered down, when I used the sum function, it added all of the rows, even the unfiltered ones.*

	That's for sure a pain point. That's something that—having to copy and paste it—you know, it's extra steps that I don't seem to think are necessary." — Adriana Posada

Other Participant Quotes

Theme	Quote
Excel Preference	*"I think I just prefer Excel because I'm used to it... that's something that I use all the time, not only for work purposes but for personal purposes... basically all the companies that I've worked for ever, they use Microsoft Excel instead of Google Sheets."*

Task-by-Task Summary

Task 1: Open the Shared Spreadsheet

- **Action**: Opened Gmail, found the email, clicked the link to open the spreadsheet.
- **Outcome**: Completed successfully.
- **Notes**: Already had the spreadsheet open; retraced steps when asked.

Task 2: Filter for U.S. and Canada Manufacturers

- **Action**: Selected headers created a filter, deselected other countries.
- **Outcome**: Completed successfully.
- **Notes**: Confident and methodical approach.

Task 3: Calculate Total Purchase Amounts (Filtered)

- **Action**: Initially used SUM on filtered data.
- **Issue**: Google Sheets included hidden rows in the sum.
- **Resolution**: Copied filtered data to a new column and summed it again.
- **Outcome**: Completed with workaround.
- **Notes**: Identified a key usability issue with how Sheets handles filtered data.

Task 4: Highlight Top 5 Manufacturers

- **Action**: Sorted data by purchase amount (Z→A), selected top 5, applied light green fill.
- **Outcome**: Completed successfully.
- **Notes**: Asked for clarification on what to highlight (rows vs. cells).

Other Google Products Used

- **Gmail**: Regularly used for personal email.
- **Google Forms**: Used a few times.
- **Google Calendar**: Used frequently.
- These tools contribute to her overall familiarity with the Google ecosystem, even though she primarily uses Excel for spreadsheets.

Closing Thoughts

Category	Details
Likes	• Simplified, intuitive interface. • Easy access to key functions. • User-friendly for occasional users.
Pain Points	• SUM function includes hidden rows in filtered views, unlike Excel. • Required extra steps (copy-paste) to get accurate totals. • Preference: Still prefers Excel due to familiarity and workplace norms.

Usability Test Summary: Janelle Neville (User 3)

Date: June 20, 2025
Time: 4:00 PM (MDT)
Format: MS Teams Recording

Opening Thoughts

Category	Details
Role	Product Manager (Buyer) at a component distributor
Experience	11+ years in role; daily Excel use
Familiarity with Google Sheets	"Zero"

Central Themes

Central Theme	Description & Quotes
Excel-Centric Background	Janelle is a long-time Excel user with no prior experience using Google Sheets or other Google tools. Her comfort with Excel shaped her expectations and navigation. *"Daily, mostly Excel… It's basically what I use. Most of our manufacturers—that's how they share information, price lists, that type of thing—with Excel." "I'm used to Microsoft Office suite Excel, so I can't think of anything that really would make [Google Sheets] better."*

Initial Learning Curve	She found the interface "subtly different," especially icons and layout, but adapted quickly. *"It's just subtly different, right? Using it within Google than it is through, you know, the Microsoft Office suite... took a little bit to kind of find those within the icons because they function just a little bit differently."*
Overall Positive Impression	Despite being new to Google Sheets, she found it functionally like Excel and easy to use after brief exploration. *"It seemed to be virtually the same as a regular Microsoft Excel spreadsheet... I think it's great." "It seems to work well as long as you get more comfortable clearly using these different things up here that look a little bit different from first glance."*

Other Participant Quotes

Theme	Quote
Interface Differences	*"This looks very different up here... not used to doing it in here."*
Adapting to Google Sheets	*"That looks better." (after correcting a calculation)*
Suggestions for Improvement	*"I don't think so, no... I think it functions just like the other."*

Task-by-Task Summary

Task 1: Open the Shared Spreadsheet

- **Action**: Attempted to access Google Sheets via browser.
- **Issue**: Shared file didn't appear in the expected location.
- **Resolution**: Accessed the file via a direct link in chat.
- **Outcome**: Completed with external help.

Task 2: Filter for U.S. and Canada Manufacturers

- **Action**: Located and applied filter.
- **Outcome**: Completed successfully.
- **Notes**: Noted the interface looked "very different," but navigated it quickly.

Task 3: Calculate Total Purchase Amount

- **Action**: Scrolled to bottom, used sum function.
- **Outcome**: Initially doubted result, then corrected it.
- **Notes**: Trusted visual feedback to verify accuracy.

Task 4: Highlight Top 5 Manufacturers

- **Action**: Sorted and highlighted top 5 purchase amounts.

- **Outcome**: Completed successfully.

Closing Thoughts

Category	Quotes
Positive Feedback	*"It seemed to be virtually the same as a regular Microsoft Excel spreadsheet... I think it's great." "It seems to work well as long as you get more comfortable using these different things up here that look a little bit different from first glance."*
Pain Points	*"It's just subtly different... took a little bit to kind of find those within the icons because they function just a little bit differently."*
Suggestions	*"I can't think of anything that really would make it better. No, I think it's great."*

Appendix D: User Test Unedited Videos

User 1 Video: Kailer Clements (21:31)

https://youtu.be/9BBx0DEUh8k

User 2 Video: Adriana Posada (15:01)

https://youtu.be/iK3qJaEUHZg

User 3 Video: Janelle Neville (10:42)

https://youtu.be/B9C0Q4s9yFo

Appendix E: User Test Google Sheets Files

User 1 Test File: Kailer Clements

https://docs.google.com/spreadsheets/d/1Vxty-8KdFgnosOXAk0PNTHls2nUNtiayEAFiYlaB-7c/edit?usp=sharing

User 2 Test File: Adriana Posada

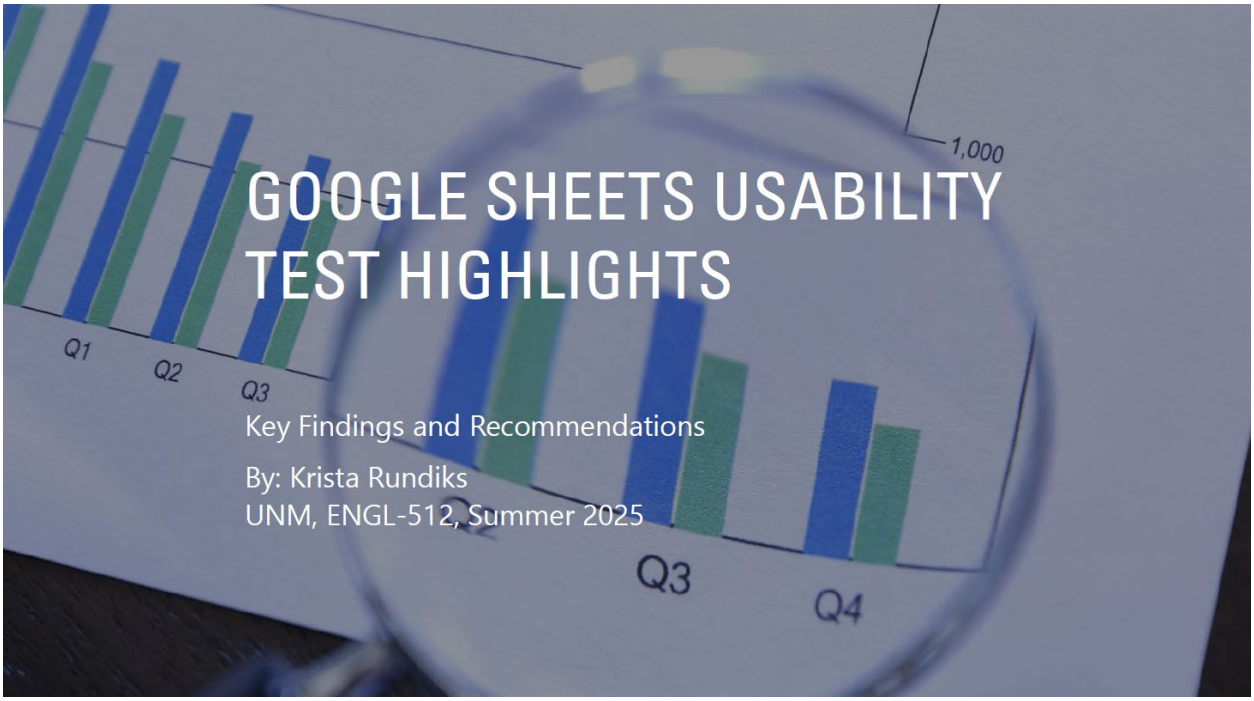
https://docs.google.com/spreadsheets/d/1-HO-f_sgyWuboZ2cjeI825ElPOJcGQQ6tfVSeSHJQ4M/edit?usp=sharing

User 3 Test File: Janelle Neville

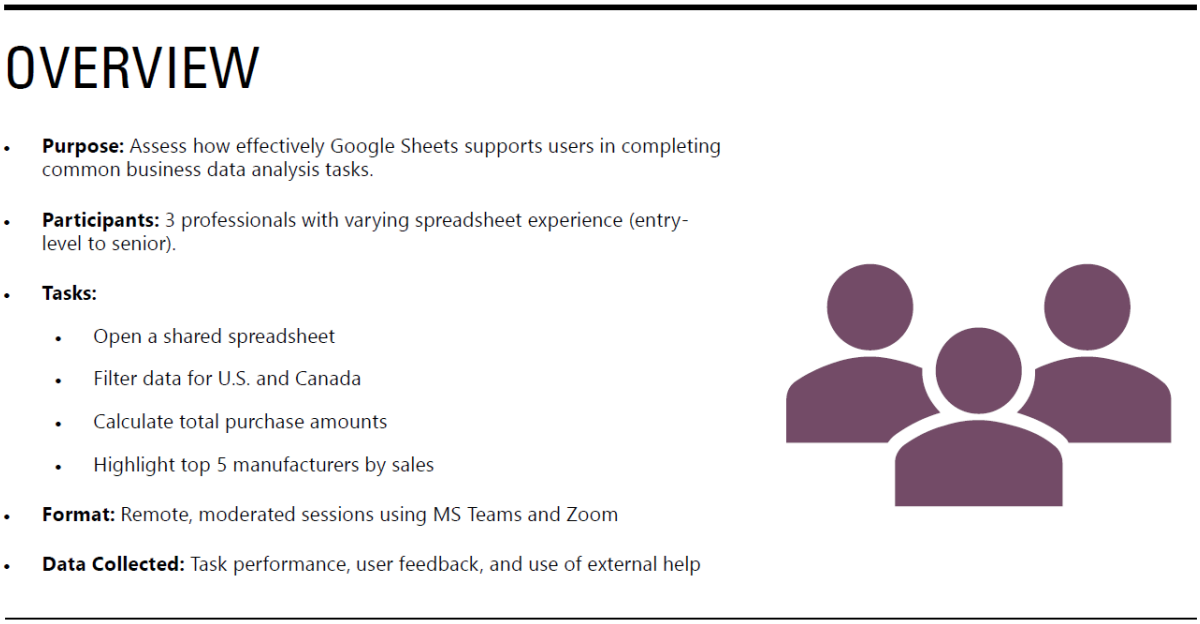
https://docs.google.com/spreadsheets/d/18RPTXBblHGXbmGSRjynULF5_XPDdSWVs0t3j-1A9NuE/edit?usp=sharing

Appendix F: Google Sheets Usability Test Highlights Presentation (Screen Shots)

Title Slide

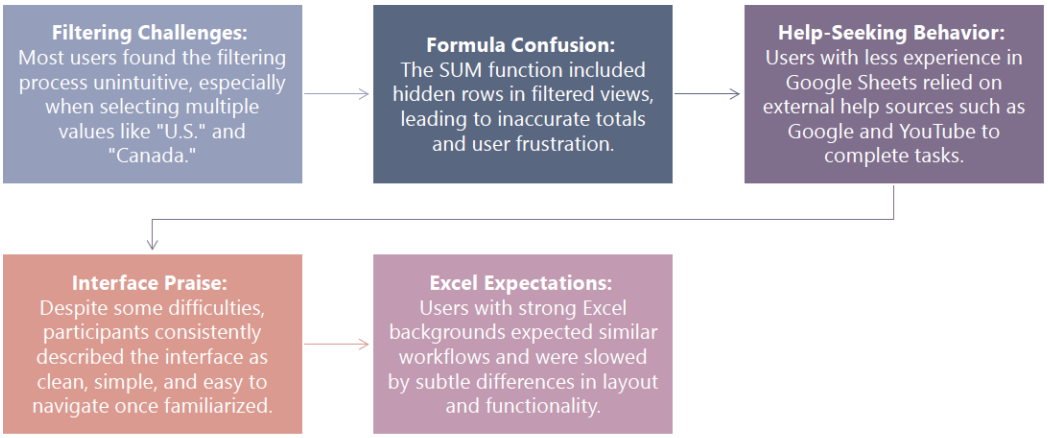


Overview



Key Findings

KEY FINDINGS



User Quotes

USER QUOTES

"I had to Google how to filter by two countries—it wasn't obvious at all."
– Kailer User 1

"In Excel, I can do this in two clicks. Here, it felt like five."
– Kailer User 1

"It's not bad once you figure it out, but getting there takes time."
– Kailer User 1

"There should be a formula tab or something. I spent way too long just trying to find SUM."
– Kailer User 1

"Even though the rows were filtered down, when I used the sum function, it added all of the rows, even the unfiltered ones."
– Adriana User 2

"It is pretty self-explanatory... there's not a lot going on, so it's easy to find even if you're not used to using it."
– Adriana User 2

"It's just subtly different... took a little bit to kind of find those within the icons."
– Janelle User 3

"It seemed to be virtually the same as a regular Microsoft Excel spreadsheet... I think it's great."
– Janelle User 3

SHORT-TERM RECOMMENDATIONS

1. **Streamline Filtering:** Make multi-select filter options more visible and user-friendly.
2. **Clarify SUM Function Behavior:** Improve accuracy or provide clearer guidance when used with filters.
3. **Add Tooltips:** Introduce hover hints for filters, formulas, and formatting to support new users.
4. **Quick Formula Access:** Add a button or tab for commonly used functions like SUM.
5. **Improve Onboarding:** Enhance in-app tutorials and prompts to reduce reliance on external help.
6. **Standardize Icons:** Align icon design and placement with familiar spreadsheet tools like Excel.

Long-Term Recommendations

LONG-TERM RECOMMENDATIONS

- **Redesign Filtering Workflow:** Introduce guided steps or visual cues for complex filtering.
- **Context-Aware Formula Assistant:** Suggest functions based on user actions or selected data.
- **Beginner-Friendly Mode:** Tailor onboarding for users transitioning from Excel or new to spreadsheets.
- **Enhanced In-App Help:** Integrate video tutorials, interactive guides, and AI-powered support.
- **Formula Consistency:** Align function behavior (e.g., SUM) with user expectations in filtered views.
- **Customizable Toolbars:** Allow users to pin frequently used tools and functions.

Closing

CLOSING

Next Steps:

- **Test Key Features**:
  Evaluate how redesigned tools impact user efficiency and satisfaction.
- **Refine Onboarding**:
  Measure the effectiveness of in-app guidance for new users.
- **Address Accessibility**:
  Identify improvements for users with diverse needs.
- **Support Inclusive Design**:
  Use insights to guide future, user-centered updates.

Thank You!

- Questions or feedback welcome

AI Statement

To support the development of this document, I used Microsoft Copilot and ChatGPT to assist with drafting the test plan, report sections, organizing participant feedback, generating slide topic suggestions for the highlight's presentation, and helping to format the references list for my reflective memorandum in APA format.

While I created the final test plan, report, highlight presentation, and reference list independently, Copilot and ChatGPT helped further structure content, refine wording, and streamline parts of the writing process.

For user test video transcription, I used Copilot to help summarize Microsoft Teams session transcripts and the trial version of Notta.ai to transcribe the Zoom audio. These tools improved efficiency, but primary analysis, interpretation, and final deliverables reflect my own work as a technical communications professional.