HELIX

Introduction

This document is a usability test analysis for our Smart Inventory Application. This test as well as analysis is designed to evaluate the application's user-friendliness, efficiency, and overall effectiveness in managing inventory tasks. Our goal is to identify strengths, weaknesses, and areas for improvement in the user experience.
Throughout this test, we will focus on several key aspects:

- Demographics
- Efficiency
- Effectiveness
- Learnability
- Error-Prone Areas
- Key Areas of Improvement

By examining these aspects, we aim to create a more user-friendly, efficient, and effective smart inventory solution that meets the needs of our diverse user base and streamlines inventory management processes.

Videos Used for additional data Gathering

In addition to our primary usability test, we've incorporated video analysis to gain deeper insights into user behavior and interaction patterns. These videos capture real-time user interactions, providing valuable visual data that complements our quantitative metrics and qualitative feedback.

Usability test coverage:

What page(s) did you explore?
50 responses
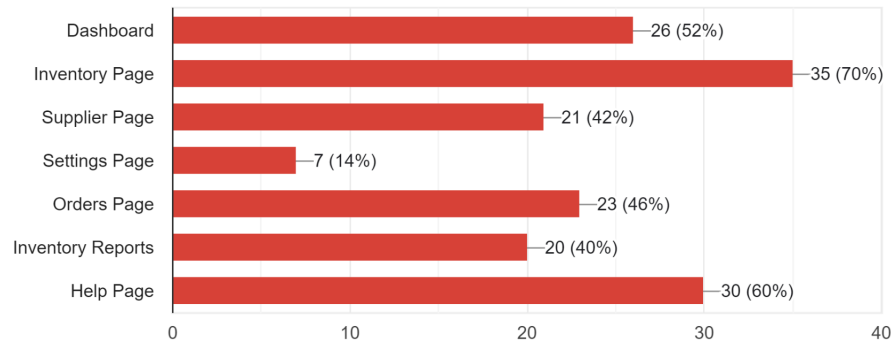
The graph shows that users explored a wide range of pages within the app, indicating comprehensive testing of various features.

The high exploration rates of the Dashboard (52%), Inventory Page (70%), and Orders Page (46%) suggest users spent significant time with the app's core functionalities. As these are our core functionality of the app.

There's a good balance between operational pages (Inventory, Orders, Supplier) and supportive pages (Help, Dashboard), indicating a holistic testing approach.

We explored pages and functionalities in great detail. With multiple pages being explored by a significant percentage of users. This suggests that testers engaged deeply with the app rather than superficially skimming features.

The high access rate of the Help Page could indicate areas where the user interface might be improved for better intuitiveness. It also makes a lot of sense due to the fact all users were first time users.

The data gathered during the recordings:

During our usability testing, we conducted detailed recordings of user interactions with our web application. This approach allowed us to capture a comprehensive set of both quantitative and qualitative data points, providing invaluable insights into user behavior and application performance.

Here's a breakdown of the data we collected and how it was gathered:
- Task Completion Rate:
  - We tracked whether each assigned task was successfully completed.

- ○ This metric helps identify which features are intuitive and which may need improvement.
- ● Action Count (Clicks):
  - ○ We meticulously counted the number of clicks or interactions required to complete each task.(Input of values was not included)
  - ○ Post-recording analysis allowed for accurate click counting, ensuring precision in our data.
- ● Time-on-Task:
  - ○ We measured the duration from task initiation to completion.(Minus form input time as its unreliable)
  - ○ Timestamps in the recordings enabled precise timing measurements.
- ● User Feedback:
  - ○ We encourage users to think aloud during the testing, capturing their thoughts and reactions.
  - ○ This qualitative data provides context to the quantitative metrics and uncovers user perceptions.
- ● Error Actions:
  - ○ We noted any mistaken actions or clicks that deviated from the optimal path to task completion.
  - ○ This helps identify areas of confusion or misalignment in the user interface.
- ● Help Usage Frequency:
  - ○ We tracked how often users accessed help documentation or requested assistance for each task.
  - ○ This indicates which features might benefit from improved in-app guidance or redesign.
- ● Overall Application Usage Patterns:
  - ○ We observed general navigation patterns and feature utilization across the entire session.
  - ○ This holistic view helps understand the user's journey through the application.

Link to the videos:

Link to the Form:

Demographics

In usability testing for inventory management software, demographic information extends beyond traditional factors like age and gender. It crucially includes the user's background and experience level with similar systems. This context is vital for interpreting user performance and feedback during the test.

Have you used any inventory management systems before?

This question helps categorize users based on their familiarity with inventory management software. It provides insight into the user's prior experience, which can significantly influence their interaction with the new system.

Previous use of inventory management systems
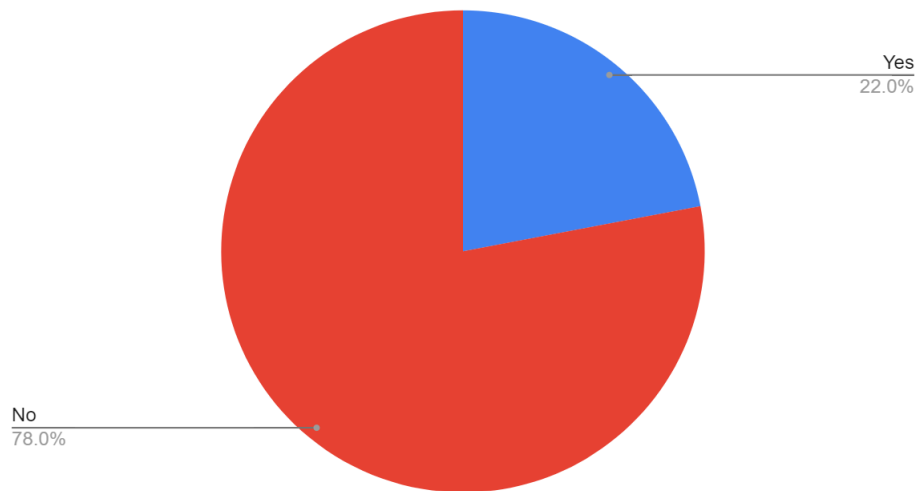
Previous use of inventory management systems (Image 1):
- The pie chart shows that 78% of users have not used inventory management systems before, while 22% have.
- This is crucial information as it indicates that the majority of your users are likely new to inventory management software.

Chart showing correlation of previous experience to ease of use
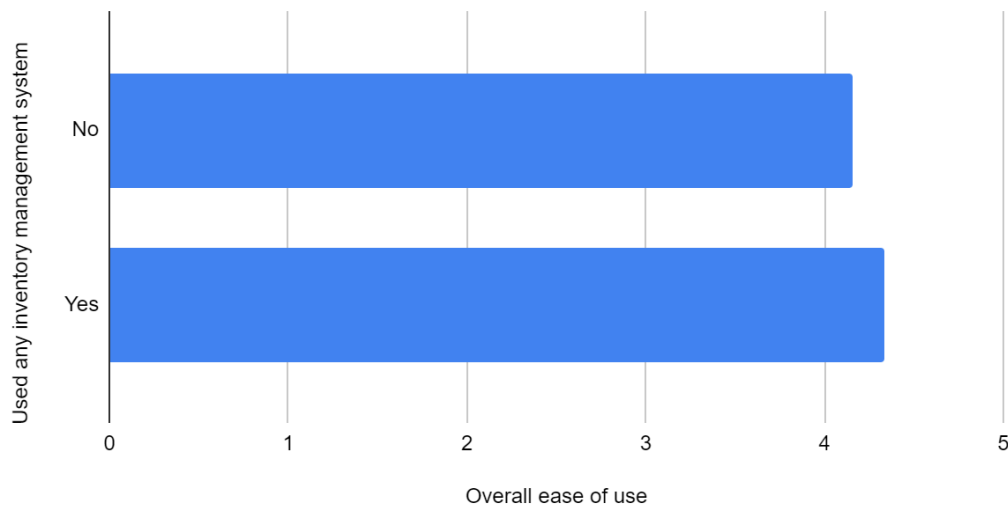
Correlation of previous experience to ease of use (Image 2):
- This bar chart compares the overall ease of use rating between users with and without prior experience.
- Both groups rate the ease of use remarkably similarly, with scores just above 4 out of 5, indicating high user satisfaction across experience levels.
- A crucial insight is that users with past experience in inventory management software find the app easy to use compared to their previous experiences.
  - This suggests that the app successfully meets industry standards.
- Users with no prior experience also report high ease of use, which is a significant achievement.
  - This indicates that the app's design is intuitive and user-friendly, allowing newcomers to quickly adapt and effectively use the system.

How would you rate your proficiency with inventory management software?

This self-assessment question gauges the user's perceived skill level. It helps researchers understand the user's confidence and comfort level with such systems, which can affect their approach to tasks and overall user experience.

How would you rate your proficiency with inventory management software?
50 responses
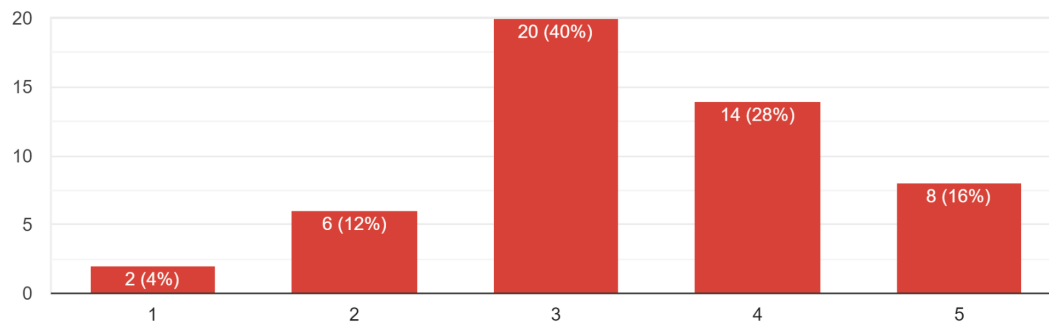
Distribution:
- The majority of users (20, 40%) rate their proficiency at 3 out of 5.
- 14 users (28%) rate themselves at 4 out of 5.
- 8 users (16%) rate themselves at 5 out of 5.
- 6 users (12%) rate themselves at 2 out of 5.
- Only 2 users (4%) rate themselves at 1 out of 5.

Insights:
- The distribution forms a bell curve, peaking at the middle proficiency level.
- 84% of users rate their proficiency at 3 or above, indicating a generally confident user base.
- Only 16% of users consider themselves beginners (levels 1 and 2).

Chart showing the correlation of proficiency to ease of use for users
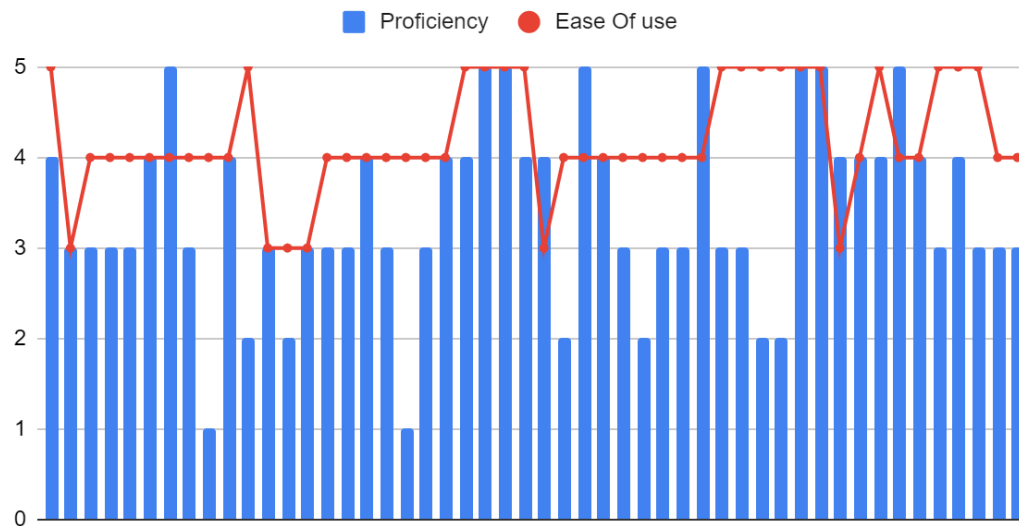
Key Observation:
- The ease of use rating (red) is consistently higher than the proficiency level (blue) for most users.

Patterns:
- There's a clear trend of users finding the system easier to use than their self-reported proficiency level would suggest.
- Even users with low proficiency often rate the ease of use quite high.
- The gap between proficiency and ease of use is particularly noticeable for users with lower proficiency levels.

Insights:
- The system appears to be significantly more user-friendly than users initially expect based on their self-assessed skills.
- This suggests the interface is intuitive and well-designed, allowing users to perform tasks more easily than they anticipated.
- The system effectively bridges the gap between user skill levels and required expertise to operate the software.

Efficiency

Efficiency is a key metric in inventory management. In this section, we analyze how quickly users can complete various tasks within the application. We'll examine time-to-completion for common operations and identify any bottlenecks or areas where users consistently slow down.

Average Time on a Task

Task	Average Time
Search	0:39
Request	0:57
Add Inventory	1:08
Add Supplier	1:04
Remove Inventory item and corresponding supplier	0:38
Initialize Inventory Scanner	0.59
Create Automation Template	2.26
Edit Delivery Details	1.02
Sort/Filter Table	0.41
Scan QR code	0.39
View QR code	0.52
Edit a Row	0.38
Add and Remove Widgets	0.53
Forecast an item	1.40
Calculate EOQ/ROP/ABC Analysis	0.51
Notifications mark as received	0.32
Create Order	1:52
Mark Order as Received	1:00
Delete order draft	1.38
View received Quotes and renegotiate	1.58

Potential Areas for Improvement:
- Finding operations:

- ○ Reason for the longer time could also be that there are so many capabilities on the order page especially and users struggle to find what they are looking for.
    - ○ So reducing the choices all in a single would be best.
- Requesting, Deleting, forecasting, View QR code, Mark order as received etc:
    - ○ The selection stage can be improved by changing the selection process by either combining the function capabilities with the selection stage or by having a user select the row after they have chosen the function they would like to perform.
    - ○ This will reduce time spent as it reduces a click and easier workflow.
- Search (0:39):
    - ○ Search can be improved by adding a clear option instead of having to remove using the keyboard. This would reduce search time.
    - ○ Have more specific autocomplete suggestions.
- Add and Remove Widgets (0:53):
    - ○ Dashboard initial load is quite long so change up the caching logic as well as split the widgets and dashboard saving logic.
- Create Automation Template (2:26):
    - ○ Automation templates' reason for length is just for the amount of input required to set up a template but can be fixed with more search and selection options.
- Add Inventory or supplier:
    - ○ The main issue for higher values is some users might fill in wrong values and submit and will receive an error message having to do the process again. We need the submit button to only be available when certain of user values.
- View received Quotes and renegotiate (1:58):
    - ○ This was long due to the fact that there are actually two tasks in one so therefore no real issue here.

Average Clicks per Task

| Task	Average Actions
Search	2.8
Request	3.95
Add Inventory	4.0
Add Supplier	4.4
Remove Inventory item and corresponding supplier	4.89
Initialize Inventory Scanner	2.9
Create Automation Template	6.9

Edit Delivery Details	3.3
Sort/Filter Table	2.9
Scan QR code	3.45
View QR code	3.8
Edit a Row	2.9
Add and Remove Widgets	3.6
Forecast an item	4.2
Calculate EOQ/ROP/ABC Analysis	4.1
Notifications mark as received	2.5
Create Order	4.9
Mark Order as Received	4.7
Delete order draft	4.2
View received Quotes and renegotiate	8.4

Potential Areas for Improvement:
- Finding operations:
  - More clicks are directly correlated to struggling to find operations.
  - Must have help to direct users on how to do operations and in more easily findable places.
- Request, Delete, Edit, View QR code, forecasting , Mark order as received etc:
  - Selecting is an issue as it causes for more actions as if the user forgot to select the item they have to reselect and redo the process.
- Search:
  - Users have to clear the input themselves, requiring more work. And they need more accurate autocomplete suggestions to find what is needed.
- Automation templates:
  - Need more advanced searching
  - Need to also be positioned where users would think it to be.
- Editing
  - Some users struggled figuring out how to edit looking at quick actions to edit. So a better way of showing them editing is possible is needed.
- View received Quotes and renegotiate:
  - Highest click count, indicating a multi-step process involving review and interaction.
  - It is just because of multiple tasks in one that make it so many actions.

- Notifications, settings and other interactions have no issues in terms of actions they are very close to the optimal.

Average actions vs Optimal actions
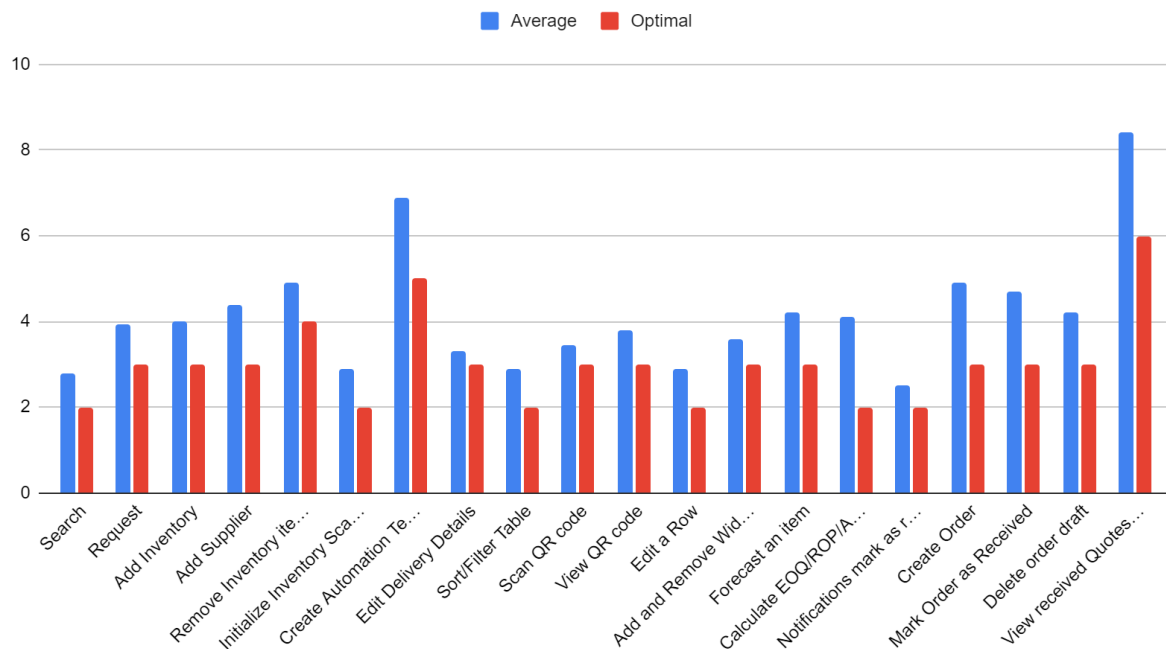
■ Average ■ Optimal

For most tasks, the average (blue) bars are higher than the optimal (red) bars, indicating that current processes are generally less efficient than they could be with beginning users.

The automation template, calculate EOQ/ROP/ABC, Mark as received and view received quotes tasks shows the largest discrepancy between average and optimal actions, suggesting this is an area with significant room for improvement.

Some tasks, like "Search" and "Edit Row", show relatively small differences between average and optimal actions, indicating these processes are already fairly optimized but suggestions told us that they can be optimized more.

Some tasks like "Add Inventory" and "Create Order" show moderate differences between average and optimal, suggesting room for improvement but not as drastically as "Inventory Count".

Some changes could include allowing for better search, better selection, making things easier to be found etc.

Time comparison between Experienced and Non-experienced users

■ Experienced ■ Non-experienced ■ Average
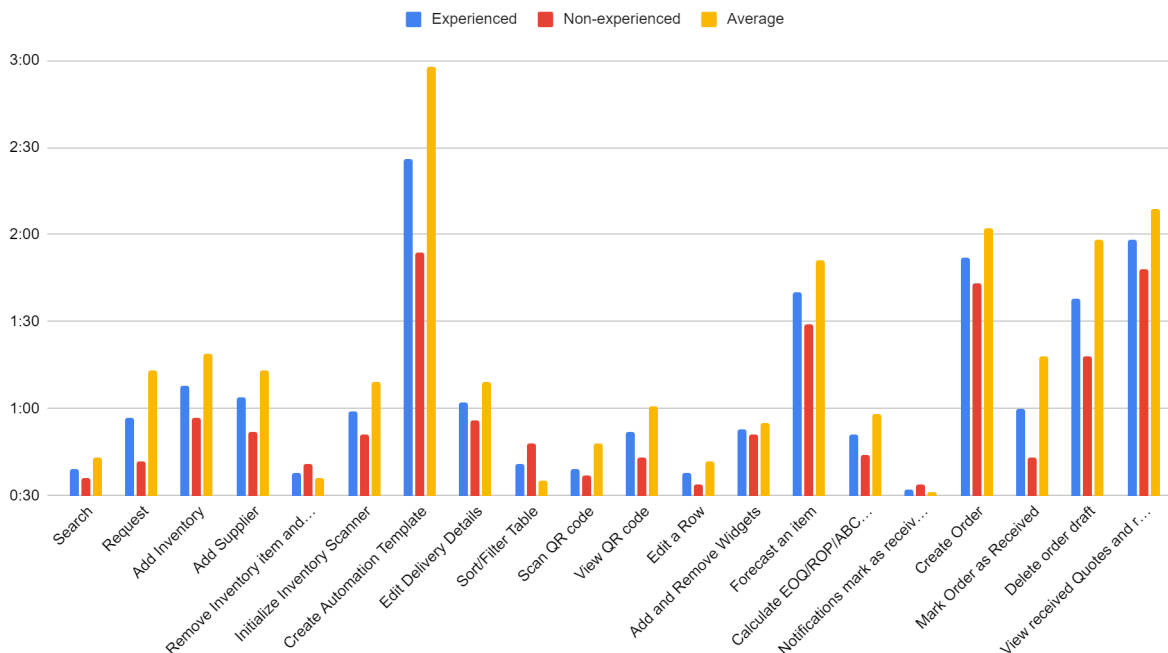
Task Complexity Variation for common tasks:

- Simple tasks like "Search" show little difference between user groups as most people have come into contact with these simple tasks.
- Complex tasks like "Automation templates" show significant time differences

Experience Impact:

- Non-experienced users generally take longer, especially for complex tasks relating to inventory management.
- The gap is most pronounced for tasks like "Automation Templates" and "Create Order".
- This is believed to be an issue of beginner users not having background knowledge required for it.

Intuitive vs. Learned Tasks:

- Tasks with small gaps (e.g., "Search", "Edit Row") are likely more intuitive.
- Larger gaps (e.g., "Inventory Count", "Create Order") suggest these require more learning.
- So a good help section is necessary as well as some more intuitive operations for the complex areas

Learnability Assessment:

- The size of the gap between experienced and non-experienced users indicates how quickly users can become proficient.

Effectiveness

Effectiveness measures how accurately users can perform tasks and achieve their goals within the application. This section evaluates the success rate of task completion, the accuracy of data entry, and the overall ability of users to leverage the application's features for inventory management.

Task Completion Rate

- 90% task completion rate per user(From questionnaire)
- 90.91% task completion rate per user(From videos)
- The task completion rates from both sources are consistently high and very close to each other, indicating strong reliability in the data. A completion rate above 90% is generally considered excellent, suggesting that users can successfully accomplish most tasks within the application.

Error Rate

- 12% of users experienced unexpected bugs, errors, or places where they thought the application should work differently.
- While an 88% error-free rate is good, there's room for improvement. The 12% error rate could impact user confidence and efficiency.
- Most of the bugs were due to some forms and selection of rows for operations. The most errors were from misunderstanding of the application though which would need deep analysis of videos such as all users trying to right click to interact with the table.

Accuracy Rate

- 69% accuracy rate for beginning users
  - All users were interacting with the app for the first time during the usability test.
  - The 69% accuracy rate for novice users is actually quite impressive given this context.
- 31% of actions were initially inaccurate
  - The majority of inaccurate actions were due to users misunderstanding what certain features or elements were meant to do, rather than actual errors or system failures.
  - This is a common and expected phenomenon when users encounter a new interface or system.

○ The 31% inaccuracy rate primarily reflects the initial learning curve, not persistent usability issues. As users become more familiar with the app, this rate is likely to improve significantly.

While the accuracy rate is good for first-time users, there's room for improvement in making certain features more intuitive or self-explanatory.

| Task	Average Errors/Inaccuracy
Search	0.5
Request	1.9
Add Inventory	1.1
Add Supplier	0.9
Remove Inventory item and corresponding supplier	0.0
Initialize Inventory Scanner	0.4
Create Automation Template	0.8
Edit Delivery Details	0.1
Sort/Filter Table	0.7
Scan QR code	0
View QR code	0.5
Edit a Row	0.8
Add and Remove Widgets	0.5
Forecast an item	1.3
Calculate EOQ/ROP/ABC Analysis	0.4
Notifications mark as received	0.2
Create Order	1.2
Mark Order as Received	0.6
View Generated Quotes	0.4
View received Quotes and renegotiate	0.7

High-Priority Improvements:

- Request process: With the highest error rate (1.9), this needs immediate attention.
    - Considering adding clearer instructions, or implementing better validation.
    - As well as allow for a better way of selecting items for request as well as allow for right click context menu as users error where highly associated with right clicking.
- Forecasting: The complexity of forecasting (1.3 errors) suggests a need for better guidance or a more intuitive interface for this feature.
    - This can be done by allowing for a better way of selecting items for request
    - Allowing for right click context menu as users error where highly associated with right clicking.
- Order Creation: At 1.2 errors, this critical function needs streamlining.
    - Consider adding a better search for ordering.
    - Allowing users to add items using more than one field
- Inventory Addition: With 1.1 errors, this frequent task should be simplified
    - with better default values or clearer field descriptions.
    - More error checking and error messages
    - Disable submit button till input values filled which was found to be a big contributor as users don't fill all the fields and get an error.

Moderate Improvements:

- Focus on tasks like Add Supplier, Edit a Row, and Create Automation Templates. These might benefit from better user guidance or more intuitive interfaces.
    - Edit users didn't know how to find so add a button for it instead of assuming a user knows how to do it
    - Add supplier has same issues as add inventory
    - Templates have the same issue as creating orders.

Were you able to complete all the tasks assigned to you within the pages?
50 responses

Legend:
- Yes
- No

90%
10%
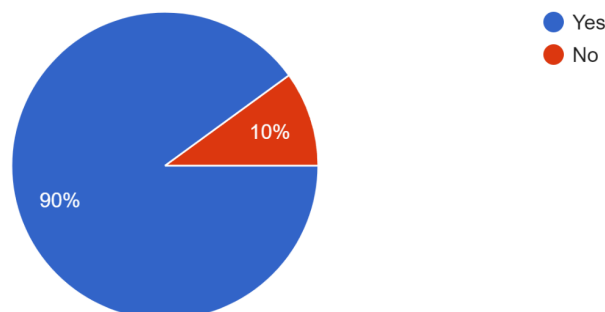
90% of users (45 out of 50 respondents) were able to complete all assigned tasks.
10% of users (5 out of 50 respondents) were unable to complete all tasks.

The 90% completion rate is generally considered very good, indicating that the majority of users can successfully navigate and use the system. However, the 10% who couldn't complete all tasks are what should be looked at.

More tooltips and improved help is needed for these users. A lot of the time it was due to time constraints that users could not finish the tasks. Which is discussed in the efficiency section.

Bar chart showing proficiency vs task completion
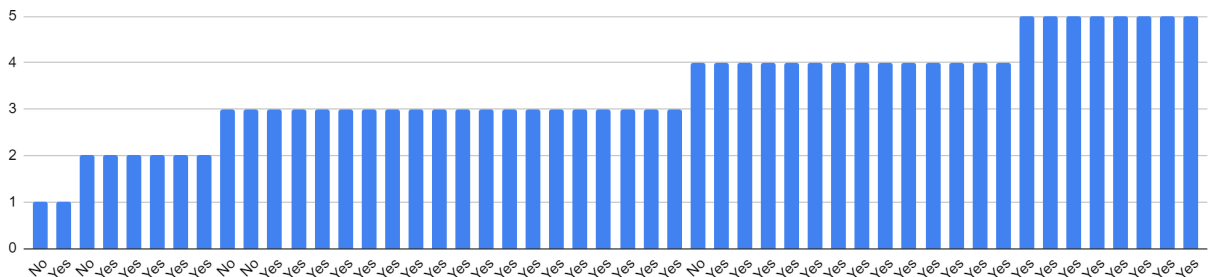
Most tasks show a proficiency level between 3 and 5, indicating generally good user competence. A few tasks on the left side of the chart show lower proficiency levels (around 1-2).

There's variability in proficiency across tasks, with some consistently scoring higher than others.

The variability in proficiency suggests that some tasks are more intuitive or easier to learn than others. Tasks with high proficiency (4-5) are likely well-designed and easy to use. Tasks with lower proficiency (1-3) may need attention in terms of user interface design or user training.

Learnability

For any new software, the ease of learning is crucial for user adoption. This section assesses how quickly new users can understand and navigate the application. We'll look at factors such as the intuitiveness of the interface, the clarity of instructions, and the learning curve for different user groups.

First-Time User Success Rate:

- 90% task completion rate for first-time users

- **Analysis:** This is an excellent result, significantly above the industry average for first-time users (typically around 70-80%). It indicates that the application has a highly intuitive design and clear user flow.
- **Implication:** The high success rate suggests that the onboarding process and initial user experience are well-designed, reducing the need for extensive training.

Total Help Usage Absolute Frequency:

- Total Help Usage: 86 times across all users
- Average Help Usage: 1.65 times per user
- Analysis: The relatively low frequency of help usage (less than twice per user on average) corroborates the high task completion rate, indicating that users can navigate the system largely independently.

Average amount of times asked for help or went to help per task
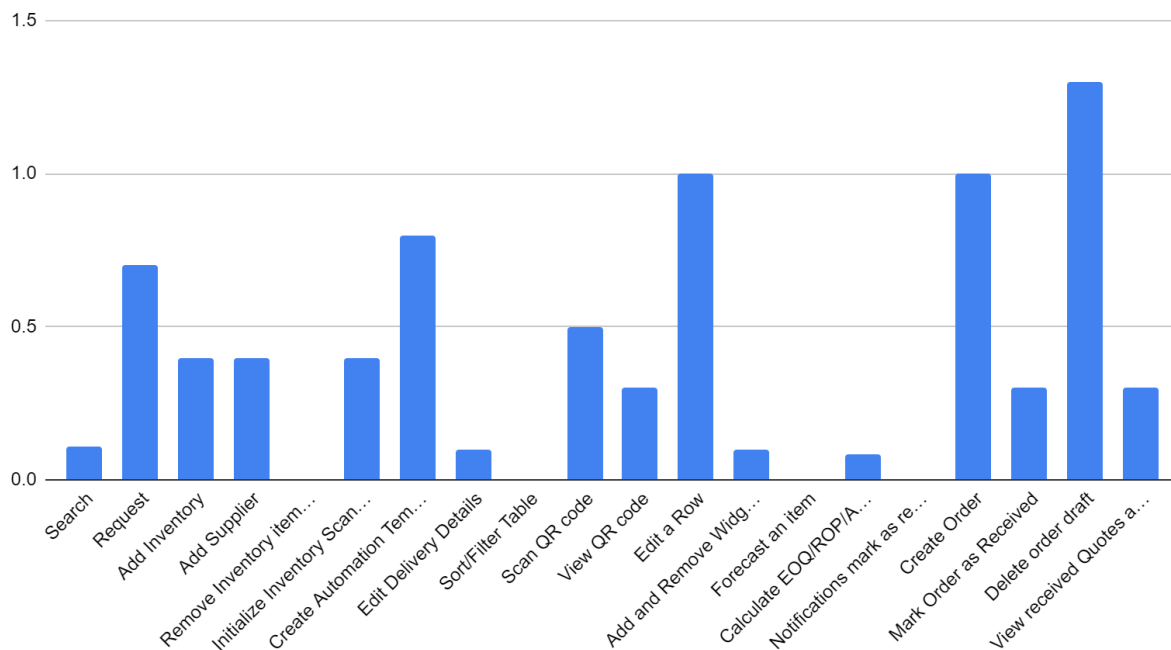
Edit row, Delete draft order, Create order:
- These tasks have the highest average help requests, indicating it's the most challenging for users.
- This is solved through having an edit button as users struggle to edit if they dont have some way of knowing where to find it.
- Delete orders needs rework of deleting them such as adding it to its own context menu as noticed that users also try to right click to delete a row.

Add and Remove Widgets, View QR code:
- These tasks also show high rates of help requests.

- Assumed it is due to selection which can be fixed by changing the workflow of selection and choosing an operation.
- Adding and removing widgets could be a factor of the long loading and dont know why they don't see the widgets can be solved with a loader

Easily Learnable Tasks:
- Search
- Sort/Filter Table
- Calculate EOQ/ROP/ABC Analysis
- Scan QR code
- Remove Inventory item

Simplify Complex Interfaces:
- Redesign the UI for quote management and widget manipulation to be more intuitive.
- Break down complex tasks into smaller, more manageable steps.

Contextual Hints:
- Add hover-over tips or small info icons next to complex features that provide quick explanations.

Satisfaction

User satisfaction is a key indicator of the application's overall success. This section explores users' subjective experiences with the software, including their likes, dislikes, and overall impressions. We'll analyze feedback on the interface design, feature set, and how well the application meets their inventory management needs.

Overall Ease of use satisfaction

How would you rate the overall ease of use for the page(s) you tested?
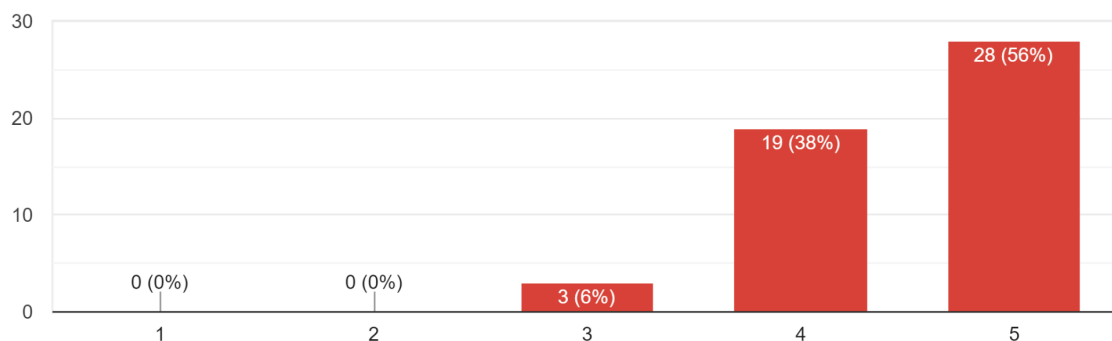50 responses
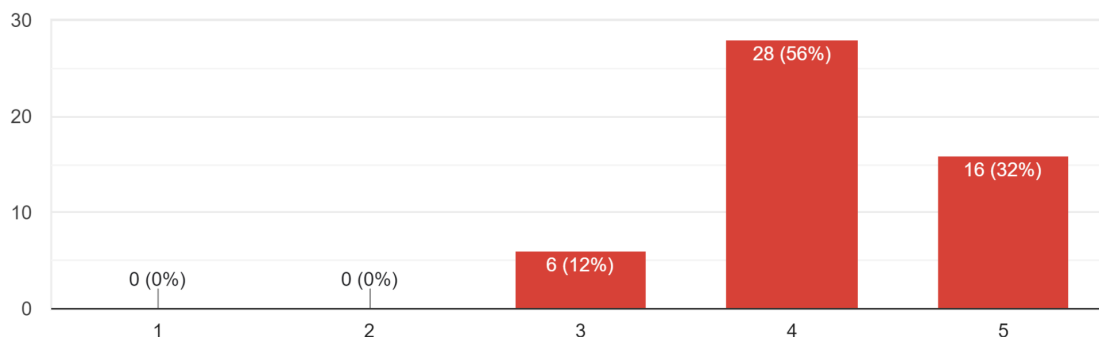
Overall Ease of Use Satisfaction:

- 32% rated it 5/5 (very satisfied)
- 56% rated it 4/5 (satisfied)
- 12% rated it 3/5 (neutral)
- No ratings below 3

Analysis: The vast majority (88%) of users find the application easy to use, with only a small portion feeling neutral. This indicates a highly user-friendly interface overall.

Overall Satisfaction of UI design

How satisfied are you with the visual design and layout of the page(s) you tested?
50 responses

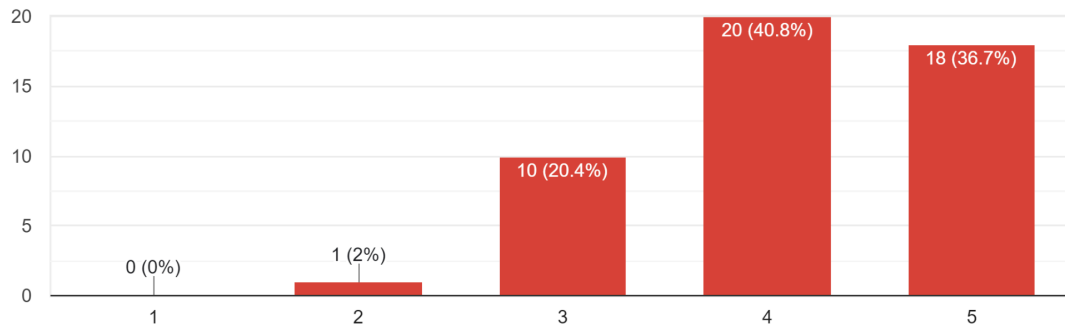Overall Satisfaction of UI Design:

- 56% rated it 5/5 (very satisfied)
- 38% rated it 4/5 (satisfied)
- 6% rated it 3/5 (neutral)
- No ratings below 3

Analysis: An impressive 94% of users are satisfied or very satisfied with the visual design and layout. This suggests a visually appealing and well-organized interface.

Overall Satisfaction of Responsiveness

How would you rate the responsiveness and speed of the page(s) you interacted with?

49 responses

Overall Satisfaction of Responsiveness:

- 36.7% rated it 5/5 (very satisfied)
- 40.8% rated it 4/5 (satisfied)
- 20.4% rated it 3/5 (neutral)
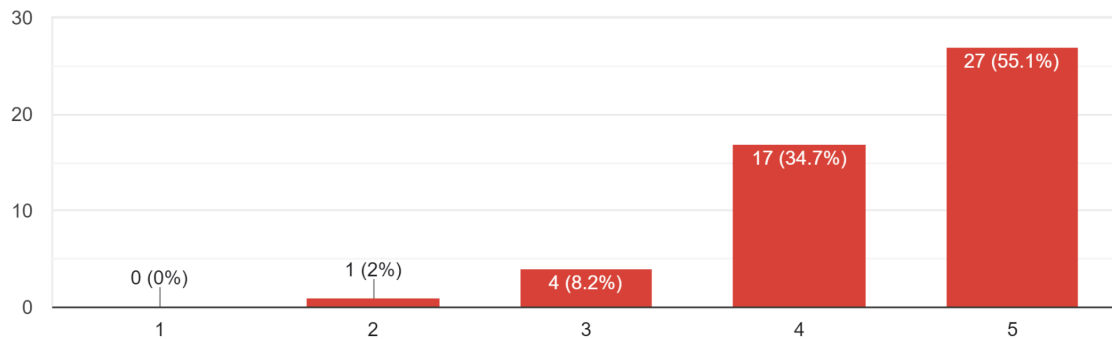- 2% rated it 2/5 (somewhat dissatisfied)
- No ratings of 1/5

Analysis: While 77.5% of users are satisfied with the responsiveness, there's a noticeable portion (20.4%) who are neutral, and a small percentage expressing dissatisfaction.

This suggests room for improvement in application speed and responsiveness. The areas with most work needed would

Overall Satisfaction of Graphs

How satisfied are you with the data visualisation (graphs, charts, tables) in the page(s) you tested?
49 responses

Overall Satisfaction of Graphs:

- 55.1% rated it 5/5 (very satisfied)
- 34.7% rated it 4/5 (satisfied)
- 8.2% rated it 3/5 (neutral)
- 2% rated it 2/5 (somewhat dissatisfied)
- No ratings of 1/5

Analysis: Nearly 90% of users are satisfied with the data visualization, indicating effective use of graphs, charts, and tables. However, there's a small portion who feel neutral or slightly dissatisfied, suggesting some room for refinement.

Overall Satisfaction of Information layout

In your opinion, are the features and information well laid out on the pages (is it easy to find actions, are logos and text meaningful)?

50 responses
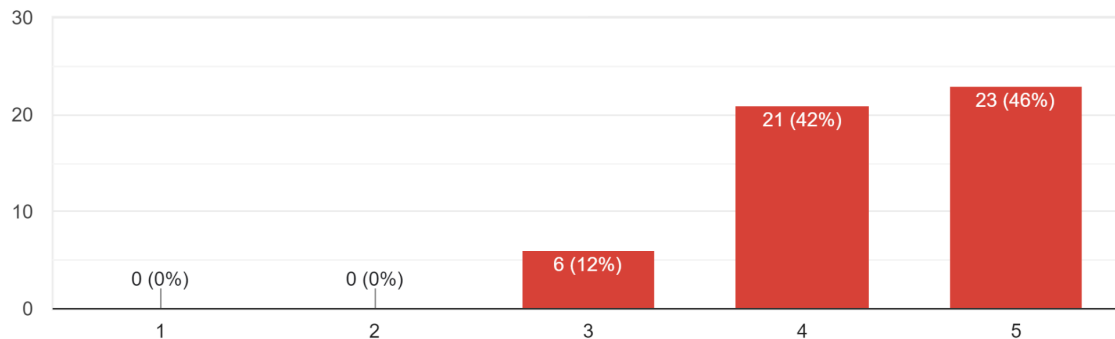
Overall Satisfaction of Information Layout:

- 46% rated it 5/5 (very satisfied)
- 42% rated it 4/5 (satisfied)
- 12% rated it 3/5 (neutral)
- No ratings below 3

Analysis: 88% of users find the information layout satisfactory, with features and information well-organized and easy to find. The 12% neutral responses suggest there might be minor improvements possible in information architecture.

Overall conclusions:

1. The application excels in UI design and overall ease of use, with very high satisfaction rates.
2. Information layout and data visualization (graphs) are also strong points, with room for minor improvements.
3. Responsiveness shows the most potential for improvement, with a higher percentage of neutral and slightly dissatisfied users compared to other aspects.
4. Across all categories, the majority of users are satisfied or very satisfied, indicating a generally well-designed and user-friendly application.

Key areas of improvement and Fixes Implemented

Based on our comprehensive analysis, this section outlines the most significant opportunities for enhancing the application. We'll prioritize improvements that address major user pain points, increase efficiency, and align with users' most pressing needs in inventory management

Help usage for new users:
- Help accessed frequently by first-time users, indicating need for improvement as users struggled fully understanding the new concepts.
- Fix: Create onboarding videos in the help.

Form submission error messages:
- Noticed need for more well-defined errors for form submissions
- Fix: Develop clearer, and more specific error messages for each possible form submission issue. Add more inline validation to catch errors before submission and disable submit buttons till all checks pass.

Form-related bugs:
- Bugs noticed with some forms that need fixing
- Fix: Conduct thorough testing to identify and resolve all form-related bugs

Time taken for quick action access:
- Noticed delay between selection and accessing quick actions.
- Fix: Implement a better way of selecting and performing an action.

Need for faster mechanisms:
- Users indicated a desire for speedier interactions and easier finding of functionality.
- Fix: Reduce the number of clicks required for common tasks and reduce all functionality in quick actions making it easier to find what is needed.

Help system and search functionality:
- Users struggled with filter function and struggled finding information on the help page,
- Fix: Implement a robust search feature that covers help documentation.

Right-click functionality:
- Many users attempted to right-click rows
- Fix: Implement a context menu that appears on right-click. Include commonly used actions in the context menu

Selection and action workflow:
- Selection followed by action resulted in excessive clicks and noticed selections were a significant problem for users
- Fix: Selection when user right clicks removing the selection issues.

Row editing awareness:
- Users unaware of double-click to edit rows, attempted right-click
- Fix: Add an edit option so when the context menu appears they can see if they would like to edit. Implementing multiple ways to enter edit mode (e.g., edit button, keyboard shortcut)

Dashboard slow loading:

- Users had to wait a little longer compared to other pages to wait for it to finish loading.
- Fix: Improve on the caching mechanism and separate the adding of widgets adding its own loader.

Empty dashboard:
- Users assume when the dashboard is empty it is supposed to be that way.
- Fix: add some text to notify users with empty dashboard that they must add widgets

Search bar clear:
- Noticed that users took longer on search as they had to remove the text themselves.
- Fix: add a clear button to improve efficiency.

Search bar autocomplete
- Noticed that users took longer on search as they also did not have specific enough recommendations.
- Fix: improve the autocomplete algorithm.

Reduction of quick actions:
- Users struggle to find certain operations in quick actions.
- Reduction of Quick actions options to make choices and interactions easier to find and perform

Ordering:
- Noticed users took a lot of time relating to ordering.
- FIx: Add more search capabilities and help with ordering by giving more details than just codes